



**Date:** December 14, 2018

**To:** Jacob Berkey, Laurie Hulse-Moyer, Sean Lundblad

**From:** Margee Chambers *Margee Chambers*

**CC:** Ecology: Nancy Pritchett  
Spokane Clean Air: Julie Oliver, Mark Rowe

**Re:** Request for Exceptional Event informational flagging for:  
Elevated PM<sub>2.5</sub> concentrations August 8, 10, 13-16, 19-23, 2018 (11 days)  
Elevated PM<sub>10</sub> concentrations August 19-20, 2018 (2 days)

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Spokane Regional Clean Air Agency (Spokane Clean Air) requests that the Washington State Department of Ecology (Ecology) place an informational flag on PM<sub>2.5</sub> (11 days) and PM<sub>10</sub> (2 days) concentrations recorded at the Spokane - Augusta Avenue site as exceptional events and enter a description into the U.S. Environmental Protection Agency's (EPA) Air Quality System (AQS). EPA's Exceptional Event Rule (EER) provides a process for excluding qualifying exceedances from calculations when determining compliance with National Ambient Air Quality Standards (NAAQS). The first step in the process is informational flagging of the data in the monitoring record and entering an event description.

The elevated concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> occurred during a period of severe wildfire smoke impacts, where winds transported smoke and ash from regional wildfires in California, Idaho, Montana, Oregon, Washington, and British Columbia in August, 2018. This resulted in some of the worst air quality on record for the region.

**This resulted in elevated 24-hour PM<sub>2.5</sub> concentrations:**

Spokane – Augusta Avenue Site (AQS# 530630021)

PM<sub>2.5</sub> FEM BAM-1020

Serial number: T15027

Tag number: E139344

- August 8, 2018: 38.6 µg/m<sup>3</sup>
- August 10, 2018: 38.2 µg/m<sup>3</sup>
- August 13, 2018: 71.7 µg/m<sup>3</sup>
- August 14, 2018: 66.7 µg/m<sup>3</sup>

- August 15, 2018: 58.5  $\mu\text{g}/\text{m}^3$
- August 16, 2018: 51.6  $\mu\text{g}/\text{m}^3$
- August 19, 2018: 185  $\mu\text{g}/\text{m}^3$
- August 20, 2018: 150.3  $\mu\text{g}/\text{m}^3$
- August 21, 2018: 49.5  $\mu\text{g}/\text{m}^3$
- August 22, 2018: 48.8  $\mu\text{g}/\text{m}^3$
- August 23, 2018: 61.7  $\mu\text{g}/\text{m}^3$

**This resulted in elevated 24-hour  $\text{PM}_{10}$  concentrations:**

Spokane – Augusta Avenue Site (AQS# 530630021)

$\text{PM}_{10}$  TEOM 1400AB

Serial number: 140AB252210406

Tag number: SCAPCA 06225

- August 19, 2018: 221  $\mu\text{g}/\text{m}^3$
- August 20, 2018: 180  $\mu\text{g}/\text{m}^3$

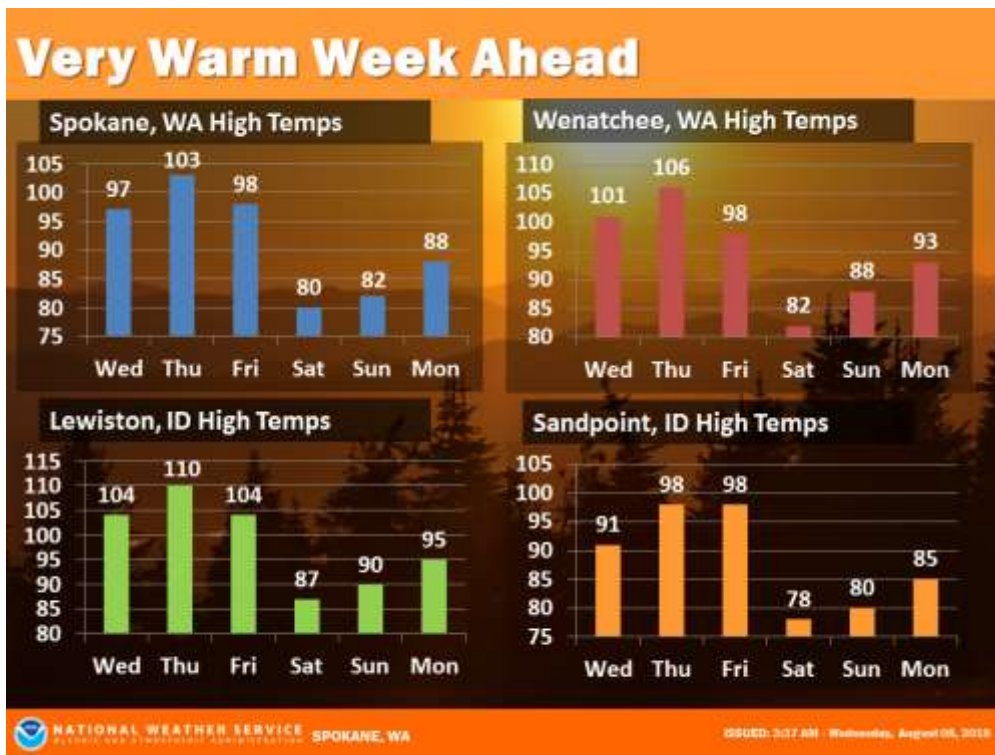
**Flagging Request:** Please review the information in this flagging memo and place exceptional event informational flags on August 8, 10, 13-16, 19-23, 2018, at the Spokane - Augusta Avenue  $\text{PM}_{2.5}$  site (AQS site ID #530630021, monitor FEM BAM-1020 #E139344), on August 19-20, 2018, at the Spokane – Augusta  $\text{PM}_{10}$  site (AQS site ID #530630021, monitor TEOM 1400AB #SCAPCA 06225). Please use the code “I-Informational” and enter the event description shown below:

Preliminary review of data suggests that regional wildfires, winds transporting smoke and ash into Spokane County, and high pressure systems trapping the smoke in the air shed, contributed to elevated levels of  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  concentrations at the Spokane – Augusta monitors.

Supporting information in this flagging memo includes:

- Initial Fire Weather Watch and Air Quality Alert by National Weather Service – Page 3
- Spokane Clean Air & Spokane Regional Health District Joint News Releases – Page 8
- Spokane Clean Air Enviroflash Notifications (Air Quality Forecasts) – Page 11
- Spokane Clean Air, National Weather Service, Ecology and other Agencies Snapshots of Website and Social Media Posts – Page 20
- Media Various New Stories - Page 92

## Fire Weather Watch (8/8/18) and Air Quality Alert (8/13/18) by National Weather Service



URGENT - FIRE WEATHER MESSAGE  
National Weather Service Spokane WA  
630 AM PDT Wed Aug 8 2018

...HOT, DRY AND UNSTABLE CONDITIONS FOLLOWED BY GUSTY WINDS...

.Hot, dry and unstable conditions looks to peak on Thursday in the Cascades and on Friday over the Idaho Panhandle. This will be followed by a strong cold front Friday night with the potential for dry breezy winds and a threat of dry thunderstorms. This combination may lead to critical fire weather conditions with the potential for increased fire spread of current fires and possible new fire starts.

IDZ101-WAZ673-674-676-677-680-682-684>687-090130-  
/O.CON.KOTX.FW.A.0004.180809T1900Z-180811T0600Z/  
Northern and Central Idaho Panhandle (Zone 101)-  
East Washington Northern Columbia Basin (Zone 673)-  
East Washington Palouse and Spokane Area (Zone 674)-  
East Washington South Central Cascade Valleys (Zone 676)-  
East Washington Central Cascade Valleys (Zone 677)-  
East Washington South Central Cascade Mountains (Zone 680)-  
East Washington Central Cascade Mountains (Zone 682)-  
East Washington Okanogan/Methow Valleys (Zone 684)-  
East Washington North Cascades (Zone 685)-

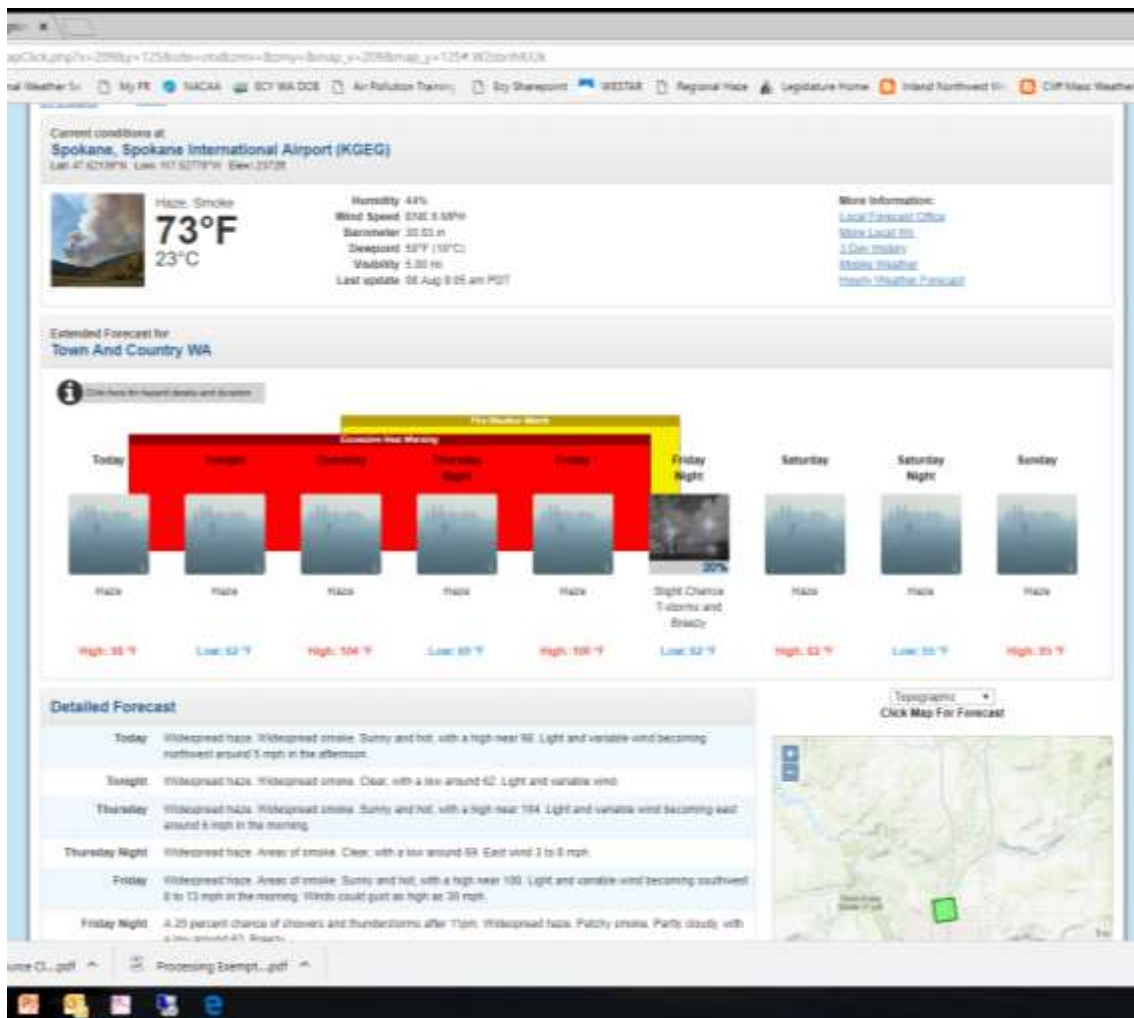
East Washington Northeast (Zone 686)-  
East Washington Okanogan Highlands (Zone 687)-  
630 AM PDT Wed Aug 8 2018

...FIRE WEATHER WATCH REMAINS IN EFFECT FROM THURSDAY AFTERNOON THROUGH FRIDAY EVENING FOR HOT, DRY AND UNSTABLE CONDITIONS THURSDAY FOLLOWED BY DRY GUSTY WINDS FOR FRIDAY ACROSS MUCH OF EASTERN WASHINGTON AND THE NORTHERN AND CENTRAL IDAHO PANHANDLE...

- \* Affected Area: Fire Weather Zone 101 Northern and Central Idaho Panhandle (Zone 101)...Fire Weather Zone 673 East Washington Northern Columbia Basin (Zone 673)...Fire Weather Zone 674 East Washington Palouse and Spokane Area (Zone 674)...Fire Weather Zone 676 East Washington South Central Cascade Valleys (Zone 676)...Fire Weather Zone 677 East Washington Central Cascade Valleys (Zone 677)...Fire Weather Zone 680 East Washington South Central Cascade Mountains (Zone 680)...Fire Weather Zone 682 East Washington Central Cascade Mountains (Zone 682)...Fire Weather Zone 684 East Washington Okanogan/Methow Valleys (Zone 684)... Fire Weather Zone 685 East Washington North Cascades (Zone 685)... Fire Weather Zone 686 East Washington Northeast (Zone 686) and Fire Weather Zone 687 East Washington Okanogan Highlands (Zone 687).
- \* Winds: Light winds Thursday and Thursday night. West to southwest winds 15 to 25 mph with gusts up to 35 mph by Friday afternoon and evening.
- \* Timing: The hot, dry and unstable conditions peak by Thursday afternoon and evening in the Cascades and over north Idaho Friday. Dry and breezy winds increase Friday afternoon and evening.
- \* Relative Humidities: 8 to 18 percent in the low lands and 18 to 25 percent over the higher terrain.
- \* Temperatures: 95 to 105 in the low lands and mid 80s to mid 90s in the higher terrain.
- \* Lightning: Slight chance of dry thunderstorms Friday night.
- \* Impacts: Hot, dry and unstable conditions could lead to increased growth on current fires. Any thunderstorms can lead to new fire starts. Dry and breezy winds have the potential for increased fire spread of current or new fires.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A Fire Weather Watch means that critical fire weather conditions are forecast to occur. Listen for later forecasts and possible Red Flag Warnings.



WAC001-003-007-017-019-023-025-043-047-051-063-065-075-141700-  
 Adams-Asotin-Chelan-Douglas-Ferry-Garfield-Grant-Lincoln-Okanogan-  
 Pend Oreille-Spokane-Stevens-Whitman-  
 Including the cities of Othello, Ritzville, Asotin, Anatone,  
 Wenatchee, Leavenworth, Cashmere, Entiat, Chelan, Manson, Plain,  
 East Wenatchee, Bridgeport, Waterville, Douglas, Republic,  
 Inchelium, Keller, Curlew, Danville, Laurier, Pomeroy, Moses Lake,  
 Ephrata, Quincy, Mattawa, Royal City, Coulee City, Davenport,  
 Odessa, Wilbur, Reardan, Sprague, Omak, Okanogan, Brewster,  
 Oroville, Mazama, Winthrop, Methow, Twisp, Conconully, Newport,  
 Metaline Falls, Ione, Cusick, Diamond Lake, Spokane, Airway Heights,  
 Medical Lake, Cheney, Rockford, Liberty Lake, Deer Park, Colville,  
 Chewelah, Kettle Falls, Springdale, Northport, Pullman, Colfax,  
 Oakesdale, Rosalia, La Crosse, and Uniontown  
 954 AM PDT Mon Aug 13 2018

An Air Quality Alert has been issued by the following agencies:

Washington Department of Ecology in Spokane

Washington Department of Ecology in Yakima  
Colville Confederated Tribes  
Spokane Tribe  
Kalispel Indian Community  
Spokane Regional Clean Air Agency

Washington Counties within the Air Quality Alert Include:

Adams  
Asotin  
    Chelan  
    Douglas  
    Ferry  
    Stevens  
    Pend Oreille  
    Garfield  
    Grant  
    Lincoln  
    Okanogan  
    Spokane  
    Whitman

...AIR QUALITY ALERT UNTIL 10AM WEDNESDAY...

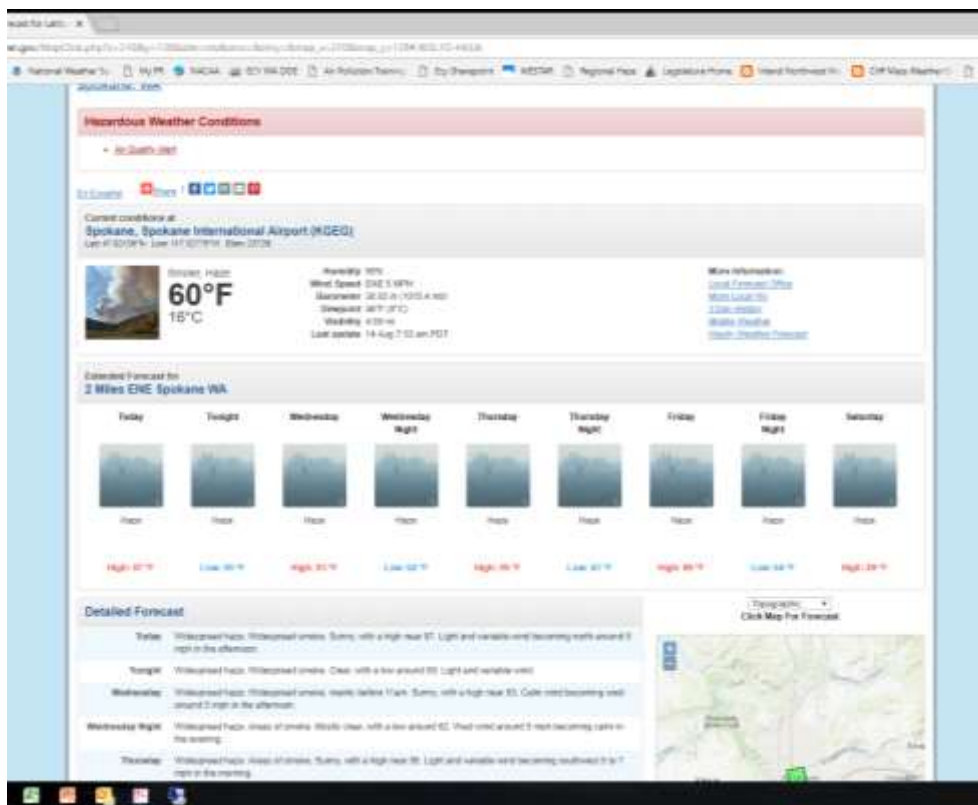
Unhealthy to very unhealthy air will be common across north central and eastern Washington, including Okanogan, Ferry, Stevens, Pend Oreille, Chelan, Douglas, Grant, Lincoln and Spokane Counties due to local and regional wildfires currently burning. Moderate to Unhealthy air is expected in Grant and Adams Counties. Air quality is expected to degrade across Whitman, Garfield and Asotin Counties by Tuesday into the Moderate to Unhealthy for Sensitive Groups category.

Children, the elderly, and individuals with respiratory illnesses are most at risk of serious health effects. If you experience respiratory distress, you should speak with your physician.

Fire activity will continue to be monitored for additional. Some improvement in ventilation will be possible toward the end of the week. The air quality alert will be reassessed on Wednesday for the rest of the week based on these trends and upcoming weather conditions.

For additional information on wildland fire smoke impacting Washington visit the Washington smoke blog at <http://wasmoke.blogspot.com> and for current Washington air quality levels, visit <https://fortress.wa.gov/ecy/enviwa/> or [airnow.gov](http://airnow.gov). You may also contact your local air quality agency.

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# Air Quality Alert

...for increased smoke from wildfires

## Air quality impacts your health

Avoid spending time outdoors when air quality is poor.

**Where:** eastern Washington & north Idaho

**When:** at least through mid week

**Impacts:** Unhealthy air quality. A greater risk for children, older adults & those with heart or lung disease.

weather.gov/airquality

NATIONAL WEATHER SERVICE SPOKANE, WA  
ISSUED: 6:00 AM Wednesday, August 15, 2018

The above alert ran on NSW Spokane website, facebook and twitter on 8/15/18 and many times throughout the wildfire impacts.

## **Joint News Release - Air Quality is Unhealthy; Take Steps to Protect Health**

Aug 08, 2018

SPOKANE, Wash – The Air Quality Index (AQI) for Spokane County is currently in the Unhealthy / Red category and an Air Quality Alert has been issued by the National Weather Service. This means that everyone should limit time spent outdoors, avoid exercising outdoors and choose non-strenuous indoor activities. Infants, children, pregnant women, adults over 65, and pets are strongly encouraged to remain indoors.

Given the extreme heat over the next few days, coupled with the warnings to avoid or limit outdoor activity will be a challenge for those without air conditioning. Make sure you don't get overheated if you live without air conditioning. Consider visiting family members, neighbors or public buildings that have air conditioning and air filtration. Leaving the area of thick smoke may be best for those with health conditions that put them at higher risk for illness.

Spokane Regional Clean Air Agency (Spokane Clean Air) expects unhealthy air quality conditions to remain in the area for the next couple of days and possibly beyond depending on weather and fire activity.

"Smoke from wildfires is especially harmful for those with health conditions like asthma. We recommend that people who are sensitive to poor air quality follow their breathing management plans, keep medications on hand and contact their health provider if necessary," said Dr. Bob Lutz, Spokane Regional Health District's health officer.

Children are more susceptible to smoke because their respiratory systems are still developing, they breathe more air (and air pollution) per pound of body weight than adults, and they're more likely to be active outdoors.

Breathing in smoke can have immediate health effects, including:

- Coughing
- Trouble breathing normally
- Stinging eyes
- A scratchy throat
- Runny nose
- Irritated sinuses
- Wheezing and shortness of breath
- Chest pain
- Headaches
- An asthma attack
- Tiredness
- Fast heartbeat

It's important that individuals limit their exposure to smoke – especially if they are susceptible. Children also are more susceptible to smoke because their respiratory systems are still developing. Kids breathe more air (and air pollution) per pound of body weight than adults, and they are more likely to be active outdoors.

Here are some additional steps people can take to protect themselves during wildfire season:



- Pay attention to air quality reports. The [Air Quality Index \(AQI\)](#) uses color-coded categories to report when air quality is good, moderate or unhealthy.
- Use common sense. If it looks and smells smoky outside, it is probably not a good time to go for a jog, mow the lawn or allow children to play outdoors.
- If a person has heart or lung disease, is an older adult, or has children, they should talk with their provider about whether and when they should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though a person may not see them.
- Some room air cleaners can help reduce particulate levels indoors, as long as they are the right type and size for your home.
- Paper "comfort" or "dust masks" are not the answer. The kinds of masks people can commonly buy at the hardware store are designed to trap large particles, such as sawdust. But they generally will not protect lungs from the fine particles in smoke.
- Respiratory masks labeled N95 or N100 provide some protection - they filter out some fine particles but not hazardous gases in smoke (such as carbon monoxide, formaldehyde, and acrolein.) This type of mask can be found at many hardware and home repair stores and pharmacies.

#### **For more information/Resources:**

*Spokane Clean Air's "Current Air Quality" [webpage](#)*

*[Washington State's Wildfire Smoke Information Blog](#)*

*[Spokane Regional Health District Wildfire FAQ](#)*

*Washington State Department of Health "Wildfire Smoke/Health" [webpage](#)*

#### **Media contacts:**

Air Quality in Spokane County: *Spokane Regional Clean Air Agency*: Lisa Woodard, (509) 477-4727, ext. 115; [LWoodard@spokanecleanair.org](mailto:LWoodard@spokanecleanair.org)

Air Quality outside of Spokane County: *WA Dept of Ecology*: Brook Beeler, (509) 329-3478; [brook.beeler@ecy.wa.gov](mailto:brook.beeler@ecy.wa.gov)

Public Health: *Spokane Regional Health District*: Kim Papich, (509) 324-1539; [kpapich@srhd.org](mailto:kpapich@srhd.org)

SRCAA/SRHD news release

**Joint Health Advisory**  
**Aug. 20, 2018**

Media Contact: Kim Papich  
[kpapich@srhd.org](mailto:kpapich@srhd.org)  
(509) 324-1539, c (509) 994-8968

#### **Hazardous Air Quality Forecasted in Spokane County, Partners Offer Recommendations for Protecting Health**

SPOKANE, Wash. – Wildfire smoke continues to severely impact air quality in Spokane County. The morning started with hourly readings reaching the "Hazardous" or "Maroon" category of the Air Quality Index (AQI). Conditions have slightly improved, and as of 12:15 p.m., the current air quality reading was at "Unhealthy" or "Red."

Because of the wildfire smoke, an Air Quality Alert has been issued by the National Weather Service. This means everyone should avoid spending extended time outdoors and choose non-strenuous indoor activities. Individuals in the “sensitive groups,” such as children, people with heart and/or lung disease, and older adults, should avoid all outdoor activities and move indoors.

Spokane Regional Clean Air Agency (Spokane Clean Air) and National Weather Service expect unhealthy air quality conditions to remain in the area through Thursday with some improvement possible Tuesday. Air quality may fluctuate between unhealthy and moderate to good for brief periods. However, northerly winds are predicted for Monday, with the potential to bring smoke from fires in British Columbia into Washington and Idaho, resulting in a prolonged return to unhealthy levels.

The National Weather Service and Spokane Regional Clean Air Agency will reevaluate the Air Quality Alert on Wednesday to determine if it needs to be extended.

"Wildfire smoke at these concentrations is unhealthy for everyone, so it's important to limit time outdoors and avoid strenuous outdoor activities. This is especially true for those who are sensitive to poor air quality. If you have health issues, consider talking with your health care provider about their recommendations for you," said Dr. Bob Lutz, Spokane Regional Health District's health officer.

It's important that individuals limit their exposure to smoke – especially if they are susceptible. Children are more susceptible to smoke because their respiratory systems are still developing, they breathe more air (and air pollution) per pound of body weight than adults, and they're more likely to be active outdoors.

Breathing in smoke can have immediate health effects, including:

- A scratchy throat
- Stinging eyes
- Runny nose
- Headaches
- Tiredness
- Coughing
- Trouble breathing normally
- Irritated sinuses
- Wheezing and shortness of breath
- An asthma attack
- Chest pain
- Fast heartbeat

Here are some additional steps people can take to protect themselves during wildfire season:

- Pay attention to air quality reports. The [Air Quality Index \(AQI\)](#) uses color-coded categories to report when air quality is good, moderate, unhealthy or hazardous.
- Use common sense. If it looks and smells smoky outside, it is probably not a good time to go for a jog, mow the lawn or allow children to play outdoors.
- If a person has heart or lung disease, is an older adult, or has children, they should talk with their provider about whether and when they should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though a person may not see them.

- Some room air cleaners can help reduce particulate levels indoors, as long as they are the right type and size for your home.
- Paper "comfort" or "dust masks" are not the answer. The kinds of masks people can commonly buy at the hardware store are designed to trap large particles, such as sawdust. But they generally will not protect lungs from the fine particles in smoke.
- Respiratory masks labeled N95 or N100 provide some protection - they filter out some fine particles but not hazardous gases in smoke (such as carbon monoxide, formaldehyde, and acrolein.) This type of mask can be found at many hardware and home repair stores and pharmacies.

For more information about precautions residents can take to protect their health when air quality reaches unhealthy to hazardous categories, see [Spokane Clean Air's "Current Air Quality" webpage](#) and the health district's [Air Quality & Wildfire FAQ here](#). More information can also be found at [www.srhd.org](http://www.srhd.org), on [Facebook](#) or Twitter [@spokanehealth](#).###

## Spokane Clean Air Enviroflash Notifications (Air Quality Forecasts)

### August 7, 2018:

#### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Tuesday, Aug 7:	Moderate	<b>Yellow</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone
Wednesday, Aug 8:	Moderate	<b>Yellow</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Tuesday, July 31st – High pressure will bring increasing temperatures to the region, with light winds providing little air movement. Expect continued smoke (PM-2.5) impacts from local and regional wildfires along with increased ozone from the hot and sunny weather. Although air quality should remain in the upper portion of the AQI-Moderate range on Tuesday and Wednesday, changes in the wind and fire activity may cause air quality to worsen at times.  
/MCKAY

### August 8, 2018:

#### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Wednesday, Aug 8:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Ozone
Thursday, Aug 9:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Ozone

Wednesday, August 8th – Hot dry weather will continue to promote the growth of regional wildfires, with high pressure limiting air movement and trapping smoke (PM-2.5) near the surface. Significant smoke plumes from the Cascade wildfires along with other local and regional wildfires will produce increased smoke (PM-2.5) impacts along with elevated ozone concentrations from the hot and sunny weather. Depending on the winds and fire activity, air quality may reach the AQI-Unhealthy range at times on Wednesday and Thursday. /MCKAY

## **August 9, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**

Thursday, Aug 9:	Unhealthy for Sensitive Groups	<b>Orange</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Ozone
Friday, Aug 10:	Unhealthy for Sensitive Groups	<b>Orange</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Thursday, August 9th – The high pressure system will keep the hot temperatures and light winds around through most of Friday, with a cold front forecast to arrive sometime late Friday night. Light easterly winds in our area combined with southerly flow through the basin have helped to disperse some of the wildfire smoke, resulting in slightly better conditions. Although ventilation has improved, smoke and haze (PM-2.5) from wildfires in the Cascades and much of the region will continue to impact our area, with increased fine particulate (PM-2.5) levels possible especially during the overnight hours. Air quality could reach the AQI-Unhealthy for Sensitive Groups range at times for Thursday and Friday, but depending on the winds and wildfire activity, air quality may worsen in some areas. /MCKAY

## August 11, 2018

### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Saturday, Aug 11:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone
Sunday, Aug 12:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Good	Green	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone

Saturday, August 11th – Today's cold front will bring cooler temperatures and breezy winds to the region, helping to disperse much of the smoke (PM-2.5) currently pooled up from regional wildfires. With most of the heavier smoke staying to the north, our area should see periods of improved air quality, but the breezy gusting winds will have the potential to greatly increase fire activity and transport smoke to areas directly downwind from the wildfires. Current forecast models indicate a chance of additional smoke (PM-2.5) impacts from the Cascade wildfires as the winds become more westerly, especially during the overnight hours, which could cause air quality to degrade quickly. Depending on the winds and fire activity, air quality should improve Saturday, but with changing conditions, it might reach well into the AQI-Unhealthy for Sensitive Groups range if the smoke (PM-2.5) plume drifts this direction. Air Quality should also be improved for Sunday but light winds and poor ventilation may still allow air quality to reach the AQI-Unhealthy for Sensitive Groups range at times on Sunday and Monday. /MCKAY

## August 12, 2018

### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Sunday, Aug 12:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Good	Green	Particle Pollution (10 microns)
	Good	Green	Ozone
Monday, Aug 13:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone

Sunday, August 12th – The winds behind the cold front have dispersed a majority of the wildfire smoke (PM-2.5) from our area, bringing a day of seasonal temperatures and sunny skies to the region. Southwest winds should keep most

of the smoke from active wildfires to the north, giving our area a period of much-improved air quality, but current forecast models indicate a chance of additional smoke (PM-2.5) impacts from the Canadian and Cascade wildfires as the winds change to a more northerly flow, especially during the overnight hours. Depending on the winds and fire activity, changing conditions could cause air quality to degrade quickly if the smoke (PM-2.5) drifts this direction. Although Air Quality should be improved for most of Sunday, light northerly winds and poor ventilation may eventually allow air quality to reach the AQI-Unhealthy for Sensitive Groups range Sunday and Monday. /MCKAY

## **August 13, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**

Monday, Aug 13:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone
Tuesday, Aug 14:	Unhealthy for Sensitive Groups	<b>Orange</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Monday, August 13th – Northerly winds have transported wildfire smoke (PM-2.5) to our area from multiple wildfires throughout the region. As the winds become more northeast, the dense plume of smoke from this morning should partially disperse to the south, which might improve conditions later in the day. Regional wildfires will continue to cause smoke (PM-2.5) impacts, with the potential for degraded air quality especially during the overnight hours. Although daytime winds should help, the conditions that caused the AQI-Unhealthy air quality early Monday may allow air quality to reach the AQI-Unhealthy for Sensitive Groups range at times on Tuesday. /MCKAY

## **August 14, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**

Tuesday, Aug 14:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone
Wednesday, Aug 15:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)

Moderate

**Yellow**

Ozone

Tuesday, August 14th – Expect periods of AQI-Unhealthy air quality today and tomorrow as the smoke (PM-2.5) impacts from local and regional wildfires continue, along with increased ozone from the hot and sunny weather. The high pressure system will bring warmer temperatures to the region, with light winds providing little air movement and the potential for degraded air quality especially during the overnight hours. Although conditions should improve somewhat, air quality may reach the AQI-Unhealthy range at times on Tuesday and Wednesday. /MCKAY

### **August 15, 2018**

#### **Forecast for Spokane, WA**

##### **Today and Tomorrow's Forecast**

Wednesday, Aug 15:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone
Thursday, Aug 16:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Wednesday, August 15th – Light surface winds from the south may bring a small improvement in air quality today, but the hot dry weather will continue to promote the growth of regional wildfires while the high pressure limits air movement and traps wildfire smoke (PM-2.5) near the surface. A significant pool of region-wide smoke combined with new smoke plumes from the local and regional wildfires will produce additional smoke (PM-2.5) impacts, along with elevated ozone readings from the hot and sunny weather. Although conditions could improve somewhat, changing winds and fire activity may allow air quality to reach the AQI-Unhealthy range at times on Wednesday and Thursday. /MCKAY

### **August 16, 2018**

#### **Forecast for Spokane, WA**

##### **Today and Tomorrow's Forecast**

Thursday, Aug 16:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Ozone
Friday, Aug 17:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)



Moderate

Yellow

Ozone

Thursday, August 16th – The light southerly winds may provide another small improvement to the air quality by this afternoon, but passage of a weak weather disturbance to our southeast overnight may bring additional wildfire smoke (PM-2.5) from the west along with a slight chance of thunderstorms. Southwest winds behind the disturbance could push some of the smoke (PM-2.5) to our north Friday afternoon, but will also contribute to increased fire activity. Although we could see some improvement each afternoon, smoke and haze (PM-2.5) from wildfires in the Cascades and much of the region will continue to impact our area, with increased fine particulate (PM-2.5) levels possible especially during the overnight hours. Air quality may continue to reach the AQI-Unhealthy range at times on Thursday and Friday. /MCKAY

### **August 17, 2018**

#### **Forecast for Spokane, WA**

##### **Today and Tomorrow's Forecast**

Friday, Aug 17:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone
Saturday, Aug 18:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone

Friday, August 17th – This morning's weak cold front will bring a few scattered showers along with slightly cooler temperatures and southerly winds to the region. Wildfire smoke (PM-2.5) currently pooled up from regional wildfires will partially disperse to our north, providing a noticeable improvement in air quality through Saturday. Things will begin to change on Sunday, with current forecast models indicating a chance of additional smoke (PM-2.5) from the Cascade and Canadian wildfires as the winds return to a northerly flow. Depending on changes in the winds and fire activity, air quality could degrade quickly, but for now air quality should be in the AQI-Unhealthy for Sensitive Groups range or better for most of Friday and Saturday, but might eventually reach the AQI-Unhealthy range on Sunday and Monday as more wildfire smoke (PM-2.5) from the north flows into the region. /MCKAY




### **August 18, 2018**

#### **Forecast for Spokane, WA**

##### **Today and Tomorrow's Forecast**

Saturday, Aug 18:	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone






Sunday, Aug 19:	Unhealthy		Particle Pollution (2.5 microns)
	Moderate		Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups		Ozone

Friday, August 17th – This morning's weak cold front will bring a few scattered showers along with slightly cooler temperatures and southerly winds to the region. Wildfire smoke (PM-2.5) currently pooled up from regional wildfires will partially disperse to our north, providing a noticeable improvement in air quality through Saturday. Things will begin to change on Sunday, with current forecast models indicating a chance of additional smoke (PM-2.5) from the Cascade and Canadian wildfires as the winds return to a northerly flow. Depending on changes in the winds and fire activity, air quality could degrade quickly, but for now air quality should be in the AQI-Unhealthy for Sensitive Groups range or better for most of Friday and Saturday, but might eventually reach the AQI-Unhealthy range on Sunday and Monday as more wildfire smoke (PM-2.5) from the north flows into the region. /MCKAY

## **August 20, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**


Monday, Aug 20:	Hazardous		Particle Pollution (2.5 microns)
	Unhealthy		Particle Pollution (10 microns)
	Moderate		Ozone
Tuesday, Aug 21:	Unhealthy		Particle Pollution (2.5 microns)
	Unhealthy for Sensitive Groups		Particle Pollution (10 microns)
	Moderate		Ozone

Monday, August 20th – Wildfire smoke (PM-2.5) transported to our area from multiple wildfires throughout the region has resulted in AQI-Hazardous air quality. Breezy gusting winds from the northeast are forecast today and Tuesday, which should help the dense plume of smoke from this morning partially disperse to the southeast and improve conditions later in the day. The gusty winds will cause increased activity in regional wildfires and will continue to cause smoke (PM-2.5) impacts, with the potential for degraded air quality especially during the overnight hours. Although daytime winds should help, the wildfires and smoke (PM-2.5) that caused the AQI-Hazardous air quality early Monday may allow air quality to reach or exceed the AQI-Unhealthy range at times on Tuesday. /MCKAY

## **August 21, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**

Tuesday, Aug 21:	Unhealthy for Sensitive Groups		Particle Pollution (2.5 microns)
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	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone
Wednesday, Aug 22:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Tuesday, August 21st – The northeast winds have helped to deflect and disperse much of the wildfire smoke from our area. The improved conditions should last through most of the day, but as high pressure begins to build in the region, the wind speeds will decline and the wind direction will become more southerly, which could allow additional wildfire smoke (PM-2.5) impacts. The high pressure will bring warmer temperatures to the region, with light winds providing little air movement and the potential for degraded air quality especially during the overnight hours. Although improved conditions should keep air quality in the AQI-Unhealthy for Sensitive Groups range on Tuesday, air quality may reach the AQI-Unhealthy range at times on Wednesday. /MCKAY

## **August 22, 2018**

### **Forecast for Spokane, WA**

#### **Today and Tomorrow's Forecast**

Wednesday, Aug 22:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Moderate	<b>Yellow</b>	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Ozone
Thursday, Aug 23:	Unhealthy	<b>Red</b>	Particle Pollution (2.5 microns)
	Unhealthy for Sensitive Groups	<b>Orange</b>	Particle Pollution (10 microns)
	Moderate	<b>Yellow</b>	Ozone

Wednesday, August 22nd – The winds have transitioned back to a southwest flow, which will begin to transport the pool of wildfire smoke back across the state and through our area. An approaching cold front is forecast to bring breezy gusting winds by Thursday afternoon, which will improve ventilation but will also transport dense wildfire smoke currently banked up against the Cascades. A significant pool of region-wide smoke combined with new smoke plumes from wildfires will produce additional smoke (PM-2.5) impacts and the potential for worsening air quality on Thursday. Although conditions could improve somewhat today, changing winds and fire activity may allow air quality to reach the AQI-Unhealthy range at times on Wednesday and could reach or exceed the upper limit of the AQI-Unhealthy range on Thursday. /MCKAY

## **August 23, 2018**

### **Forecast for Spokane, WA**

### Today and Tomorrow's Forecast

Thursday, Aug 23:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Unhealthy for Sensitive Groups	Orange	Ozone
Friday, Aug 24:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone

Thursday, August 23rd – A dry cold front is providing good westerly flow across the state, combining with locally breezy and gusting southwest winds to slowly disperse most of the pool of wildfire smoke to the east. Air quality is likely to worsen somewhat during the day today as the dense Cascade-area smoke pushes through the area, but conditions should improve by this evening. The frontal winds will increase wildfire activity, contributing additional smoke impacts by Friday evening as winds slow and the smoke begins to pool and drift south again. Although conditions may be improved for a while, smoke and haze (PM-2.5) from wildfires in the Cascades and much of the region will continue to impact our area, with increased fine particulate (PM-2.5) levels possible especially during the overnight hours. Air quality may continue to reach the AQI-Unhealthy range at times on Thursday and Friday. /MCKAY

### August 24, 2018

#### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Friday, Aug 24:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone
Saturday, Aug 25:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Moderate	Yellow	Ozone

Friday, August 24th – Yesterday's cold front was able to eventually disperse most of the smoke from our area, leaving much improved air quality to start the day. A northwest flow will bring cooler temperatures through the weekend along with transporting additional wildfire smoke from the Cascade and Canadian wildfires. The current smoke models show more smoke (PM-2.5) arriving in our area by this evening, but without high pressure to trap the smoke near the surface and improved ventilation from local southwest winds it is difficult to know just how much of an impact it will have. Depending on changes in the winds and fire activity, our good air quality could degrade quickly, with the possibility of reaching the AQI-Unhealthy range later on Friday and again on Saturday as more wildfire smoke (PM-2.5) from the north drifts into the area. /MCKAY

## August 25, 2018

### Forecast for Spokane, WA

#### Today and Tomorrow's Forecast

Saturday, Aug 25:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Good	Green	Ozone
Sunday, Aug 26:	Unhealthy	Red	Particle Pollution (2.5 microns)
	Moderate	Yellow	Particle Pollution (10 microns)
	Good	Green	Ozone

Saturday, August 25th – Air quality has improved somewhat since last night, with smoky but AQI-Moderate conditions in most of the area to start the day. The cooler temperatures, cloudy skies, and increased humidity have slowed the growth of wildfires in the region, but the northwest flow will continue to transport additional wildfire smoke from the Cascade and Canadian wildfires to our area. The current forecast models show more smoke (PM-2.5) arriving, mixing to the surface today and tomorrow as weak weather disturbances push the smoke coverage further south. Although there could be periods of improved air quality, changes in the wind direction and fire activity could degrade air quality quickly, with the possibility of reaching the AQI-Unhealthy range later on Saturday and again on Sunday as more wildfire smoke (PM-2.5) moves into the area. /MCKAY

## Spokane Clean Air, National Weather Service & Ecology Web & Social Media

### August 6, 2018

SRCAA Website Augusta PM2.5:



Ecology Facebook:

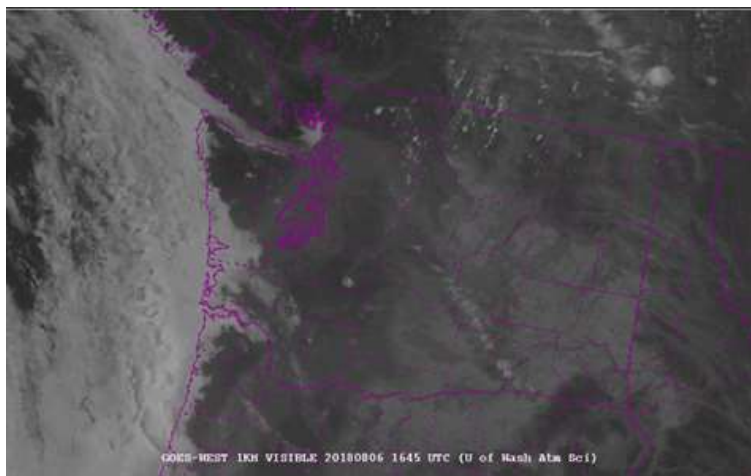
Do you want the good news or the bad news first?

Good: The sunsets should be great this week! Bad: It's smoke from wildfires in Washington, Oregon and California that will be making those sunsets so pretty. High temperatures and light winds mean that smoke won't be clearing out quickly.

In Western Washington, we're expecting moderate or worse air quality by mid-week, especially at higher elevations.

Eastern Washington is already struggling with smoke from many sources, and it could be getting worse. Expect air quality to be anywhere from moderate to very unhealthy, depending on how close the fires you are. And, we're expecting high ozone readings in the Tri-Cities Tuesday and Wednesday.

If you're going to be out and about this week, check the latest air quality forecast at <http://wasmoke.blogspot.com/>



## **August 7, 2018**

SRCAA Website Augusta 2.5PM:



Ecology Facebook:

Wildfire smoke is thick in many parts of Washington this week. Be sure to keep an eye on air quality conditions and protect your health.



WA Smoke Blog:

### [WA keeps accumulating smoke through Thursday](#)

#### **Puget Sounds Lowlands**

Lots of social media pictures of pretty sunsets and crescent moon rises over western WA, courtesy of Oregon and California smoke. Adding to the mix is the [Maple Fire, close to Hamma Hamma in the Olympic Peninsula](#)- clearly seen sending a plume of smoke toward Seattle on yesterday's satellite picture.



Thus far most smoke has remained above or to the east of western WA but that seems to be changing. Between Tuesday & Thursday, the Puget Sound lowlands will likely see some combination of smoke from the fires mentioned above, and those along the Cascades' eastern foothills. Not much wind movement until late Thursday to flush things out, so expect conditions to mostly vary between Good and Unhealthy for Sensitive Groups. Some periods of Unhealthy air are likely closer to fires. Good air is expected Friday- Saturday.

#### **Whatcom and Skagit counties**

Periodic east winds could bring in smoke from fires in the North Cascades, causing Moderate and USG air on occasion. Higher terrain might also see some California/ Oregon smoke mixing down.

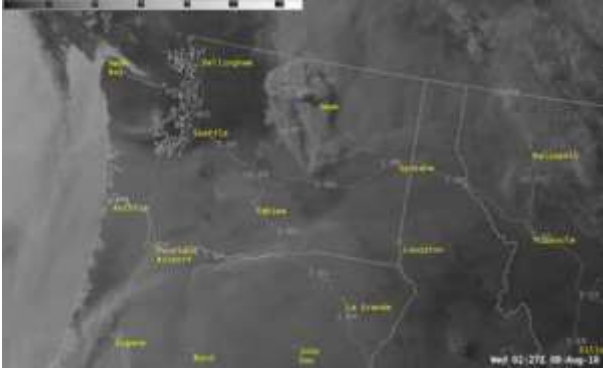
#### **Eastern WA**

Sadly, with so many fires and so little wind, Unhealthy air will be quite common in addition to the oppressive heat. No respite through Friday at least, but that smoke clearing comes at a cost: a strong front passing through will worsen fire danger and spread.



NWS Facebook:

We've had a few calls asking: "Where is all this smoke coming from?" Well, where is it not coming from? Here is a small loop of the smoke in the region, with the most active fires and smoke plumes coming from around those around the Cascades.



## **August 8, 2018**

SRCAA Website Augusta 2.5:



SRCAA Web Article:

## **Update: August 8, 2018**

Air quality is in the "Unhealthy for All" or "Red" on the Current Air Quality Index, which is updated hourly [here](#).

<b>Unhealthy</b> 151 to 200	<b>Everyone</b>	<b>Sensitive groups: <i>Avoid</i> prolonged or heavy exertion. Move activities indoors or reschedule to a time when the air quality is better.</b>
		<b>Everyone else: <i>Reduce</i> prolonged or heavy exertion. Take more breaks during all outdoor activities.</b>

**Today's 2-day Air Quality Forecast** - Hot dry weather will continue to promote the growth of regional wildfires, with high pressure limiting air movement and trapping smoke (PM-2.5) near the surface. Significant smoke plumes from the Cascade wildfires along with other local and regional wildfires will produce increased smoke (PM-2.5) impacts along with elevated ozone concentrations from the hot and sunny weather. Depending on the winds and fire activity, air quality may reach the AQI- Unhealthy range at times on Wednesday and Thursday.

**Update: August 7, 2018**

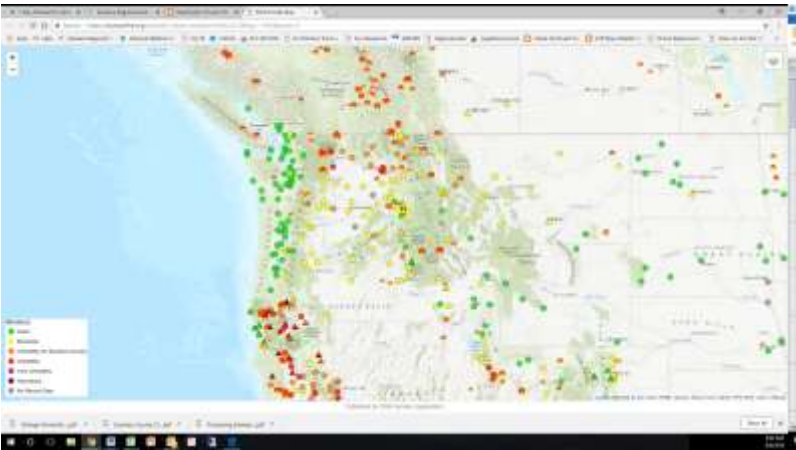
As of 12:15 pm, air quality has reached into the "Unhealthy for Sensitive Groups" or "Orange" on the Current Air Quality Index. The Current AQI is updated hourly [here](#).

Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy for Sensitive Groups 101-150	Sensitive groups include people with heart or lung disease, older adults, children and teenagers.	<p>Sensitive groups: Reduce prolonged or heavy exertion. It's OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath.</p> <p>People with asthma should follow their asthma action plans and keep quick relief medicine handy.</p> <p>If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.</p>

[AQI Guide for Particle Pollution](#)

**Air Quality Forecast** - High pressure will bring increasing temperatures to the region, with light winds providing little air movement. Expect continued smoke (PM-2.5) impacts from local and regional wildfires along with increased ozone from the hot and sunny weather. Although air quality should remain in the upper portion of the AQI-Moderate range on Tuesday and Wednesday, changes in the wind and fire activity may cause air quality to worsen at times.

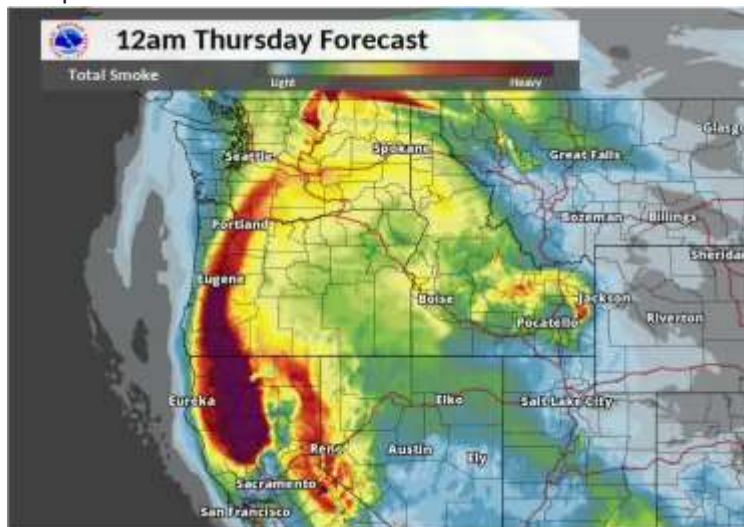
WA Smoke Blog Firemap:



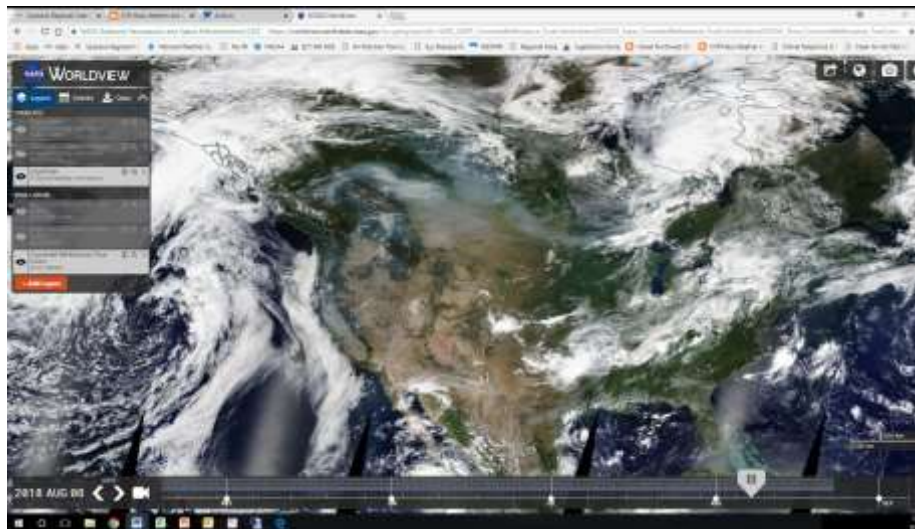


NWS Facebook:

Curious what today's smoke model is showing? Looks like increasing smoke into Thursday morning from fires burning in southwest Oregon and northern California. Also active fires in the North Cascades to provide added contributions. Smoky conditions will be especially prevalent in the Methow Valley between Mazama and Twisp.



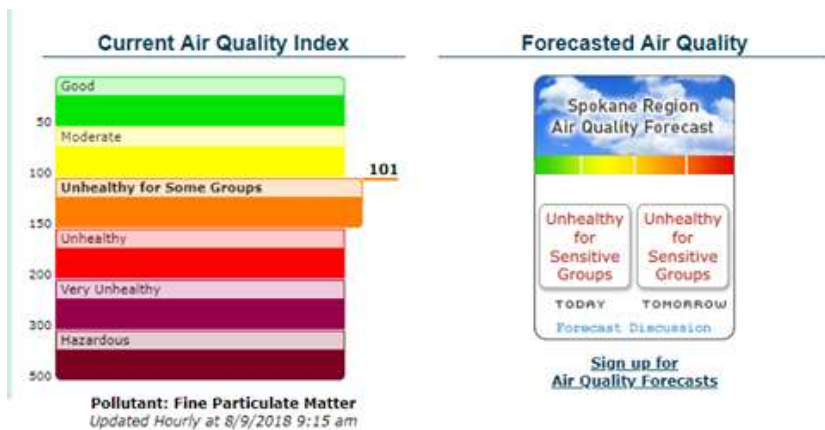
NASA EOSDIS Worldview Satellite:



**August 9, 2018**

SRCAA Facebook:

Smoke will continue to impact air quality today. We are currently in the "Unhealthy for Sensitive Groups/Orange" category. For hourly updates, please check [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



## **August 10, 2018**

SRCAA Facebook:

Depending on the winds and fire activity, air quality will likely remain in the Unhealthy for Sensitive Groups/Orange for most of today, but might reach Unhealthy/Red briefly on Saturday if smoke drifts this direction. Air Quality should be improved for Sunday but light winds and poor ventilation may still allow air quality to reach the Unhealthy for Sensitive Groups/Orange at times on Sunday and Monday. For hourly updates, please check [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality).

WA Smoke Blog:

### **Prefer the forecast the same old way?**

Satellite picture from this morning shows a lot of smoke overhead and fires in the Cascades puffing out a lot of smoke.



The clouds offshore are a harbinger of a cold front that will clear things out by tonight into Saturday. Most of western WA should see Good air this weekend, but there might be some lightning on Saturday so the potential exists for new fire starts.

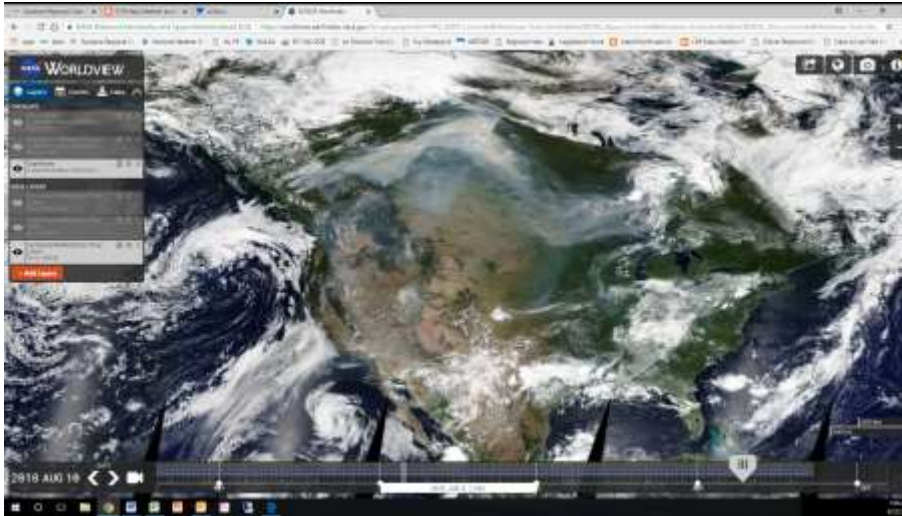
Much of eastern Washington has been choking and frying all week but will see some improvement, both from smoke and heat. Areas further from the fires are likely to enjoy Good air and this is a great time to throw open all the doors and windows to flush out homes.

Unfortunately areas closer to the fires, especially Chelan and Okanogan counties will only enjoy modest improvements.

## Catch-22

Them winds dont come with no string attached. They're strong enough to worsen fire growth. Early next week we're likely to see a return to calmer conditions so fresh smoke will not dissipate easily.

NASA EOSDIS Worldview Satellite:



## August 12, 2018

Cliff Mass Blog:

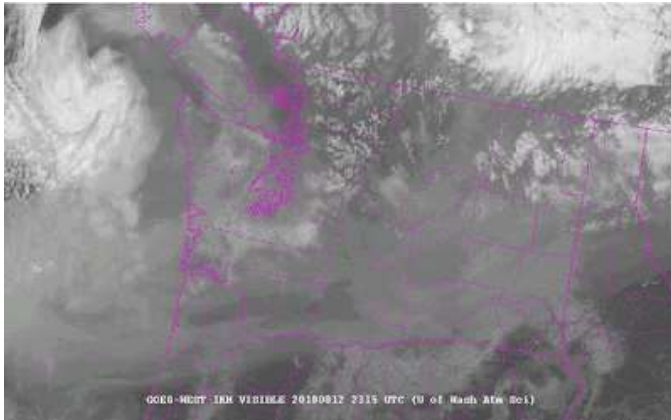
### Dense Canadian Smoke Veil Moves Southward over Washington State

There are many Canadian imports we value, such as maple syrup and wood products, but one we would rather do without: smoke from major wildfires in British Columbia. And a major push southward of Canadian smoke is occurring as I write this.

The smoke was obvious in the MODIS satellite image around noon, with low clouds beneath the smoke, west of the Cascade crest.



Most of these clouds subsequently burned off, with lots of smoke still aloft (see picture for the GOES satellite around 4 PM)

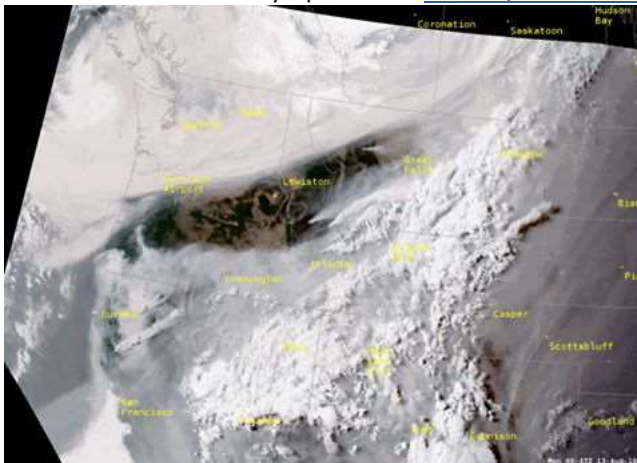


## **August 13, 2018**

SRCAA Facebook:

Smoke is blanketing much of Washington this morning. In Spokane, we're seeing the impacts and have a current air quality of "Unhealthy/Red".

Be sure to check hourly updates at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)

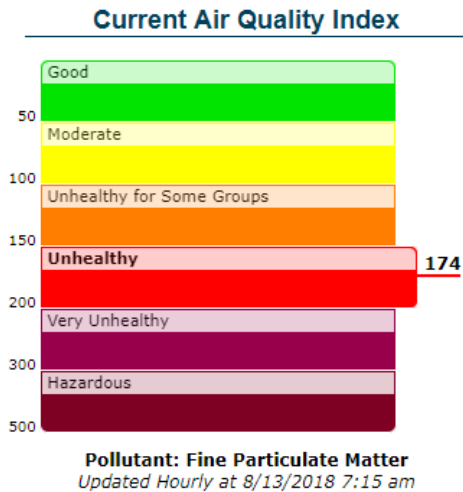


SRCAA Facebook:

Winds have brought another layer of smoke into Spokane. This morning, current air quality readings have us sitting at the "Unhealthy/Red" category.

Air quality is updated hourly at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)





WA Smoke Blog:

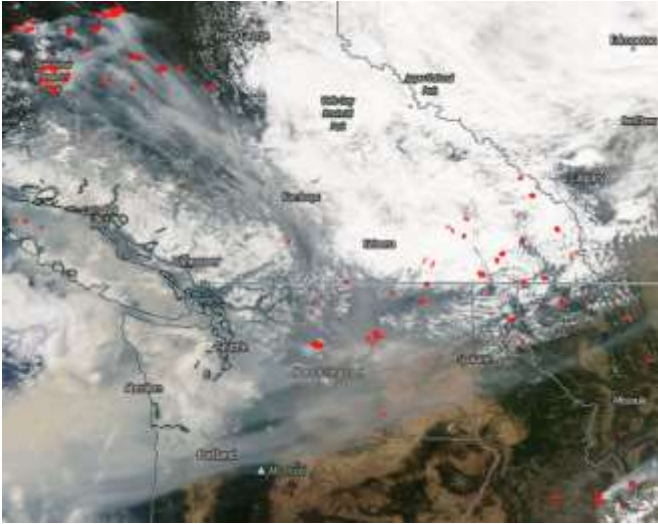
### [Smoky State overview](#)

Smoke is moving south into the state from Canada plus some of the smoke from fires east of the Cascades has filtered over the mountains into the Puget Sound area. There are other fires in the state contributing to the mix, including the large Grass Valley fire near Grand Coulee Dam but the fires indicated are the ones contributing the most to poor air quality around the state. (Satellite photo from about 2pm this afternoon. Original, large image can be seen here: [ModisAug13](#))



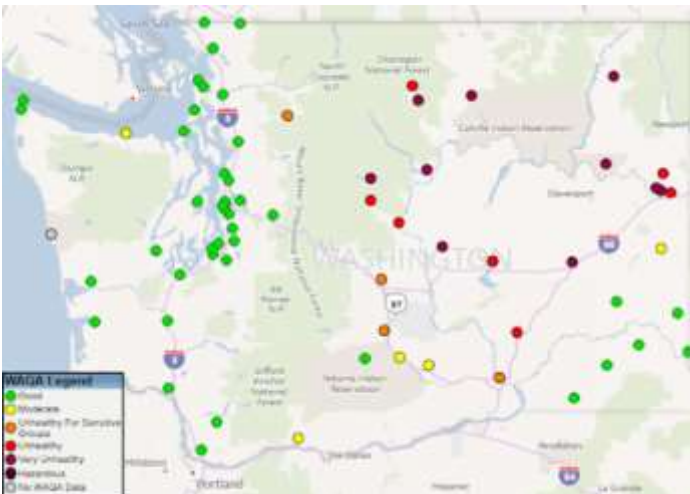
### [Where is all this smoke coming from?](#)

A shift in winds over the weekend brought a thick haze from Canada that is covering most of our state. Fortunately, residents in Western Washington are still experiencing **Good** air quality, with the exception being places at higher elevations in the Cascades experiencing air quality that is **Unhealthy for Sensitive Groups**. Some smoke might make its way from Canada into the Puget Sound lowlands later today and tomorrow, but westerly winds should return on Wednesday and clear out any lingering smoke.



**MODIS Image from Sunday afternoon with fire locations shown in red.**

Residents in the northern parts of Central and Eastern Washington are experiencing severe smoky conditions due to both local and regional wildfires that are currently burning. Monitors are showing **Unhealthy** to **Very Unhealthy** air quality from Wenatchee to Spokane, with no clearing expected in the near-term forecast. Light winds from the north are expected to continue throughout the day, which means residents in Yakima, Benton, and Franklin counties could see conditions worsen to **Moderate** to **Unhealthy**. Southeastern Washington may not get too bad, but it won't be surprising if we see **Moderate** to **Unhealthy for Sensitive Groups** air quality in Walla Walla, Asotin, and other nearby counties.

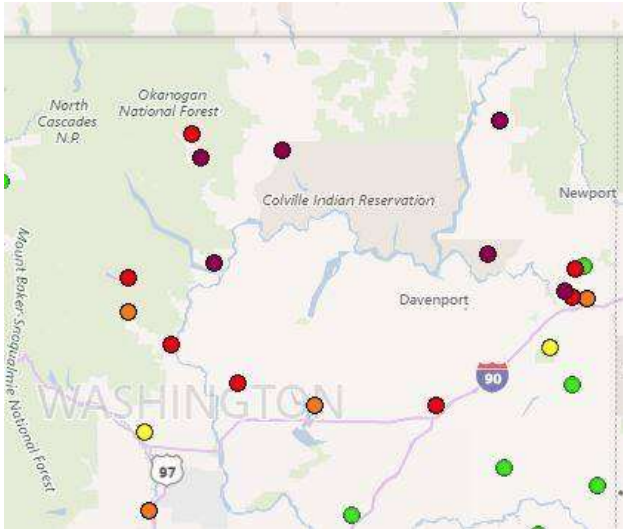


**PM2.5 Monitors on Monday Morning**

The National Weather Service has issued an air quality alert for all of central and eastern Washington. This will be updated on Wednesday, and we hope southern counties will only be experiencing short-lived smoky conditions.

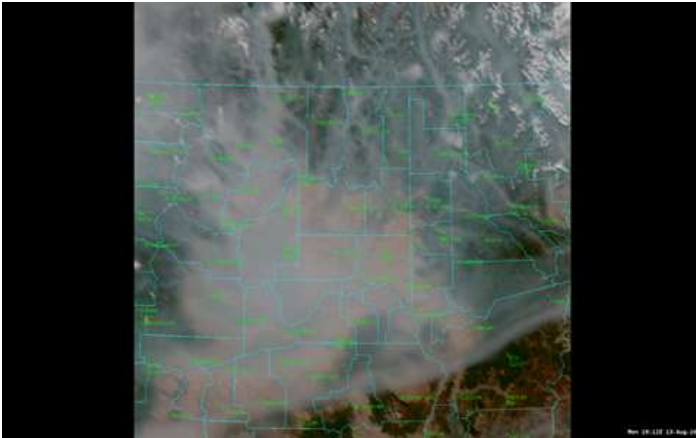
NWS Facebook:

Waking up to lots of smoke across the Inland NW. In many spots, the smoke has lowered the visibility. Meanwhile air quality has degraded to unhealthy from the Methow Valley to Colville and Spokane and in the northern ID Panhandle. Cough. Cough.



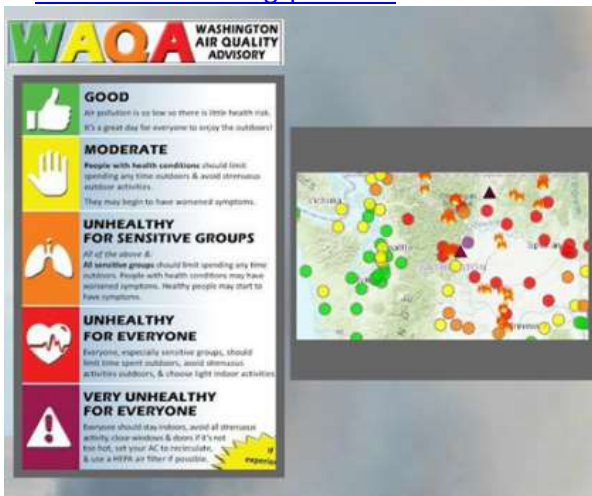
NWS Facebook:

Current Satellite imagery showing the Inland Northwest enveloped in smoke.



Ecology Facebook:

Air quality is pretty poor for much of Eastern Washington. If you can, stay indoors and put the air conditioning on recirculate. You can keep an eye on current conditions and the latest smoke forecast at [www.wasmoke.blogspot.com](http://www.wasmoke.blogspot.com).



**August 14, 2018**

SRCAA Website Augusta 2.5:



NWS Facebook:

Unhealthy air quality spans across the Inland NW today and it can impact your health. Avoid spending too much time outdoors when conditions are poor.



SRCAA Facebook:

Good information from [Spokane Regional Health District](#) about using face masks when we have unhealthy air quality.



**Spokane Regional Health District**

August 13 at 1:57 PM ·

AIR QUALITY & FACE MASKS: Remember, it is better to stay indoors than to mask.

The right face mask can only provide some protection for some people for a limit...



WA Smoke Blog:

**Unhealthy air for all!**

Yesterday turned out to be a bit more smoky in Western Washington than we anticipated. The smoky air, mostly from Canada, lingered throughout the evening and is still sticking around today. Western Washington residents should expect **Unhealthy for Sensitive Groups** to **Unhealthy** air to persist through today and into tomorrow morning. Fortunately, forecast models are showing that Wednesday afternoon should see strong enough westerly winds to clear the smoke out and bring **Good** to **Moderate** air quality into the region. There may even be a little relief as early as tonight.

Central Washington residents are not quite so lucky. We have been monitoring **Unhealthy** to **Hazardous** air quality all across the region. Residents have been hit hard with the combination of Canadian smoke plus the fires on the eastern slopes of the Cascades. Winds shouldn't bring much more Canadian smoke into the region for the next couple days, but the current smoke will likely linger and local fires will continue to impact the region. We expect **Very Unhealthy** air to persist in many areas across Central Washington for the next couple days, with perhaps better conditions in the southern-most counties.



**MODIS Satellite Image for 11 am PDT (Fire locations shown in red)**  
(Note the huge patch of smoke over BC)

Eastern Washington has also been sitting in **Unhealthy** air which will likely persist. Forecast models do show somewhat of a split between Northeastern and Southeastern Washington on Wednesday evening. Residents in Spokane and other parts of Northeastern Washington will probably continue to experience **Unhealthy** air. However, the Southeastern counties could get a little better tomorrow night, with perhaps **Moderate** to **Unhealthy for Sensitive Groups** air quality.



**Washington's PM2.5 (smoke) conditions (11 am - noon PDT)**

Please see Current Conditions [Here](#)

So, while Western Washington may have lucked out this time with a relatively short-lived smoke event, the rest of the state will likely continue to see smoky conditions in the foreseeable future.

Please see the [Smoke and Health tab](#) of this blog for information about what you can do to protect yourself from wildfire smoke. For those interested in purchasing indoor air purifiers, see this good NY Times article from last year entitled [What to Know Before Buying an Air Purifier to Clear Wildfire Smoke](#).

Posted by [Farren Herron-Thorpe \(WA Ecology\)](#) at [8/14/2018 12:36:00 PM](#)

Cliff Mass Blog:

**Smoke Storm Hits Washington State**

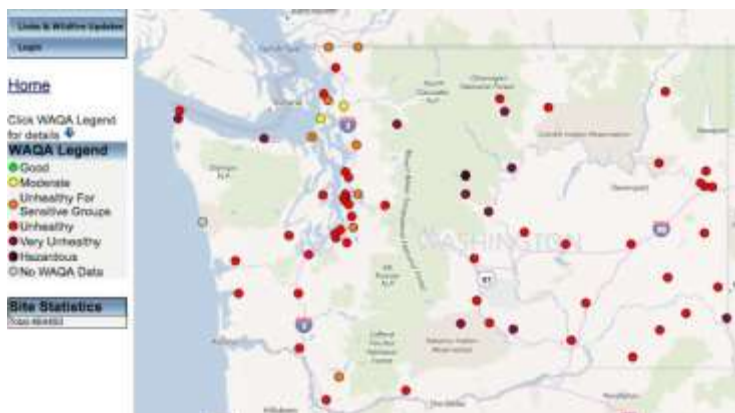
The rising sun this morning in Seattle has that other worldly red-yellow color and a thick haze lays over western Washington.

The reason? Massive amounts of smoke has made its way southward from the wildfires in British Columbia and westward from the several fires in eastern Washington.



A video drone ascent on northern Kitsap (provided by Greg Johnson of Skunk Bay Weather) dramatically shows the murk:

The latest Washington State Air Quality Map shows unhealthy conditions over western Washington, with some locations (like Port Angeles, Cheeka Peek near Tatoosh, and several locations on the eastern slopes of the Cascades) reaching very unhealthy and hazardous conditions.



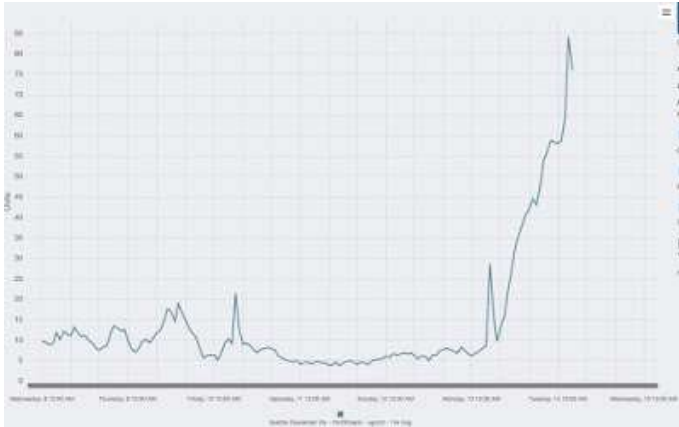
In fact, air quality is better in Beijing right now (see graphic)



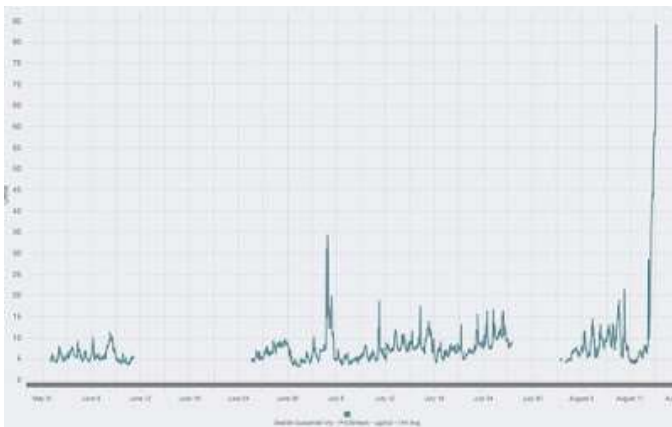
Yesterday's noon image from the NASA MODIS satellite over the region was stunning. You can see the smoke moving into western WA from Canada and eastern WA and there was an amazing, long smoke front over southern Washington.



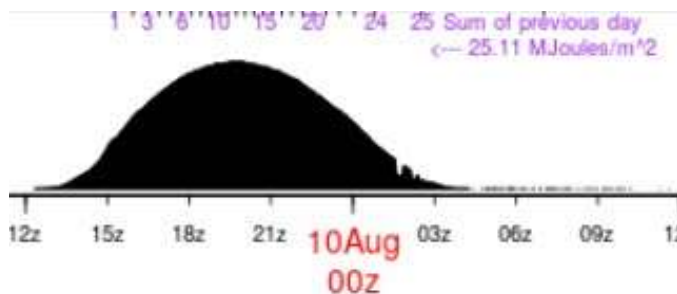
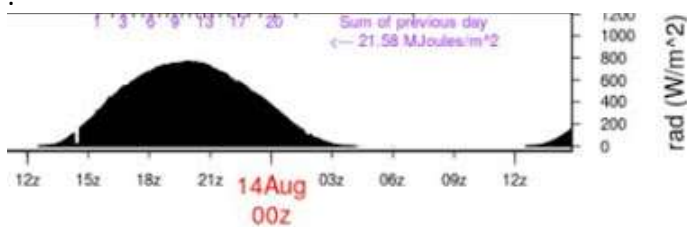
Here is Seattle (Puget Sound Clean Air Agency Duwamish site), the smoke (PM.5) surged yesterday afternoon, peaking this morning to around 80 mg per cubic meter (1-hr average).



This was by far the highest value this summer. To give you some context, here is the same plot since late May. Nothing close. There was a minor peak on July 4/5 of about 1/3 the value.



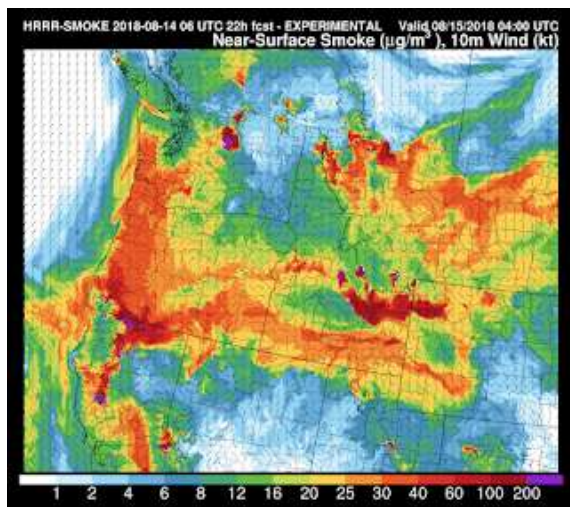
Solar radiation is being substantially reduced by the smoke. Here are plots on the UW Atmospheric Sciences roof for yesterday and August 9th (before the smoke). Down about 14%. The result will be substantially cooling of today's highs by at least 5 F based on recent experience with our WRF model.



The densest smoke is found at the lowest elevations. Paradise (5500 ft) is on the edge and Camp Muir (about 10,000 ft) is above the gunk (see picture)



The good news is that low level air quality should improve later today over Puget Sound and NW Washington, as suggested by the latest forecast of the NOAA/NWS HRRR smoke system. But smoke will return eventually.



And as I will talk about in a later blog, smoke forecasting has improved dramatically in recent years, giving meteorologists a powerful tool in warning folks of degrading air quality from wildfires.

### **August 15, 2018**

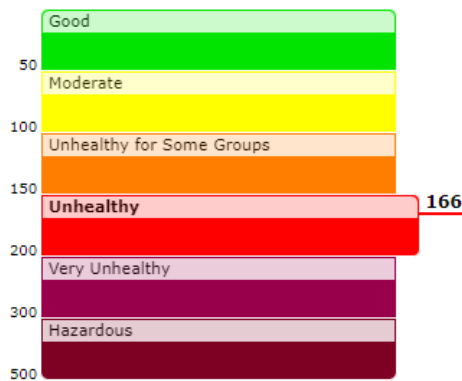
SRCAA Facebook:

Smoke is continuing to impact air quality today. We are currently seeing a reading of "Unhealthy/Red". This means everyone, especially sensitive groups, should try to stay indoors.

You can check hourly air quality updates at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



## Current Air Quality Index



**Pollutant: Fine Particulate Matter**  
*Updated Hourly at 8/15/2018 7:15 am*

**166**

SRCAA Website Augusta 2.5:



WA Smoke Blog:

### [A little clearing in Western Washington](#)

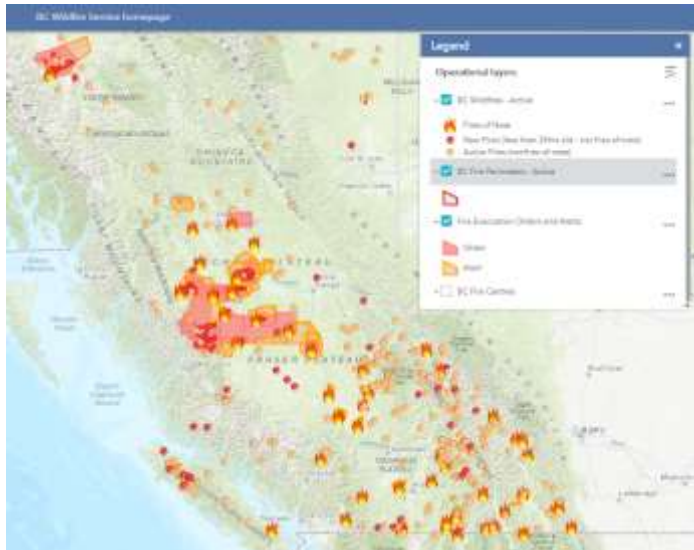
Many people in Western Washington are wondering... when will this smoke clear out? Thankfully we have seen a little clearing start to occur this afternoon. Some monitors in Western Washington are down to **Unhealthy for Sensitive Groups** and a couple are even down to **Moderate**. Most monitors in Western Washington are still in the **Unhealthy** range due to lingering smoke, but more clearing is expected through tonight and tomorrow. It may be short lived, but we expect at least a couple days of cleaner air coming up.



**MODIS Image for 11 am on Wednesday**  
Fire Locations Shown in Red

[8/15/2018 British Columbia once again dealing with a very bad wildfire year - and we're getting some of the smoke](#)

The B.C. Canada government declared a state of emergency today (Wednesday 8/15/18) due to wildfires. Approximately 566 wildfires are burning in B.C, with 29 evacuation orders affecting approximately 3,050 people. An additional 18,720 people are under evacuation alert. This is the second year in a row our neighbors to the north have been inundated with fire and smoke and some of that smoke has been heading south to Washington and beyond.



The best air quality models that predict smoke movement and accumulation in the Pacific Northwest, don't include fires and smoke from that far north. Other models do include the fires in Canada although their resolution is not as good so predicting air quality impacts in Washington as affected by smoke from Canada is rather challenging. The satellite photo below, taken yesterday (Tuesday) shows the red "hot spots" marking the large areas of fire in B.C. Fires in Washington can also be seen to the south. Note the magnitude of the smoke accumulation just north of the international border. We've already received some smoke from the north, how much more will travel to Washington in the coming days?



Another satellite photo from yesterday got a really clear view of fires and smoke around Washington. Plumes from the Crescent Mountain and McLeod fires are clearly visible north of Lake Chelan in the Methow Valley area, and the Cougar Creek plume is visible to the south of Lake Chelan closer to the center of the state. Large image available at the link: [ModisAqua8\\_14](#)



Cliff Mass Blog:

#### Seattle's Worst 24h Air Quality on Record

Air quality in western Washington is very poor right now.

**Incredibly, in central Puget Sound it is probably the worst in the nearly two-decade observing record of the Puget Sound Clean Air Agency for any time of the year.**

I have been here a long time and I have never seen anything this bad. The view from the Seattle SpaceNeedle Panocam is murky (see below)

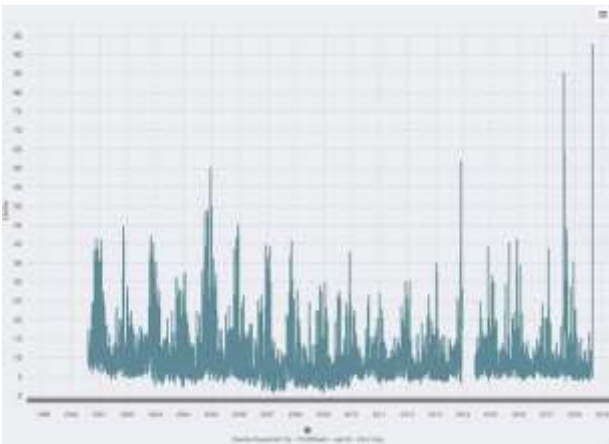


And the view from my department is very limited...no mountains and can't even see across the Lake.



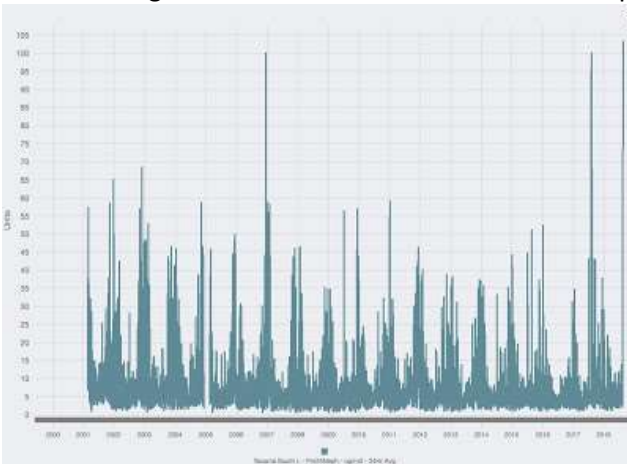


But now, let me really impress (or depress) you. Below is a plot of 24-h average particulate concentration (PM<sub>2.5</sub>) in the atmosphere at the Puget Sound Clean Air Agency Duwamish site in Seattle. **The past 24-h was the worst on record for any time of the year.** Number two was the smoky period last summer.



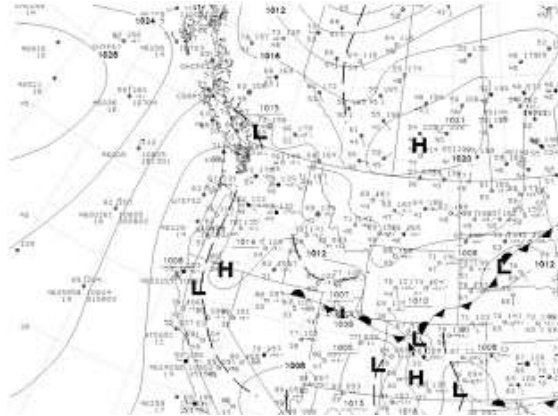
Historically, Seattle has its worst air in the winter from wood smoke and other combustion products, but today and last year were summer maxima from wildfires--very different animals.

The observing site in Tacoma also had its record in the past 24-h hours.

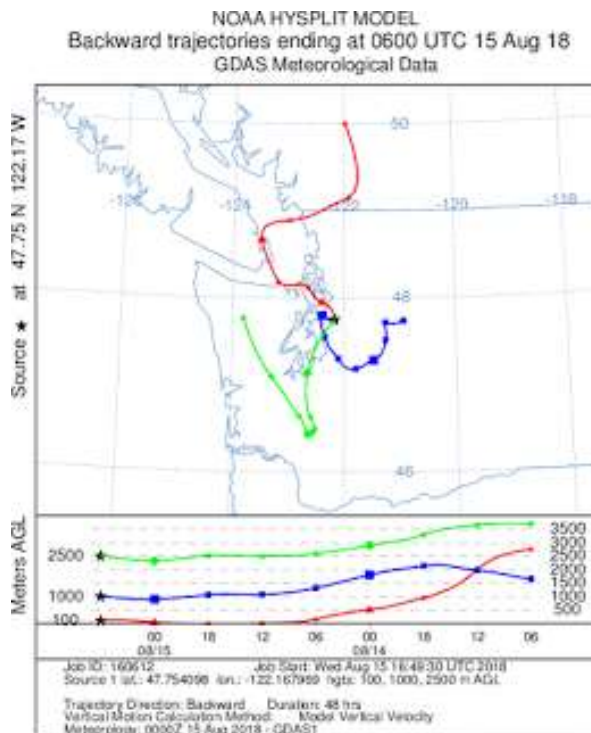


**So why did our near surface air quality get so bad so fast?**

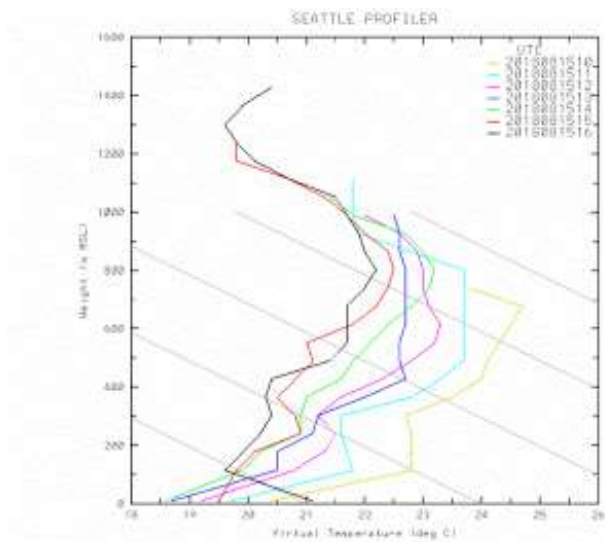
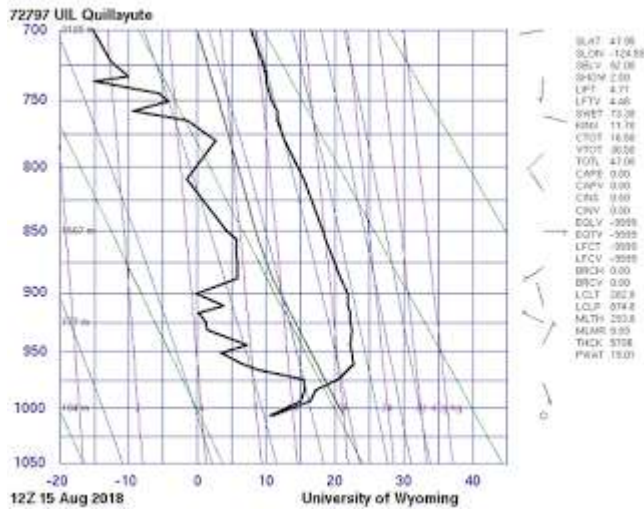
Fires were burning for quite a few weeks in British Columbia, California and eastern Washington, but western Washington had clean air at low levels (off the Pacific) with smoke aloft. But on Monday, surface high pressure started to build in north and east of us (see map), resulting in easterly and northeasterly flow over the Cascades that brought the smoke over and down the terrain into western WA--allowing smoke to get to the surface.



I ran some low-level air trajectories ending in Seattle at 11 PM Tuesday night (using the NOAA Hysplit system). Air ending at 100 meters above the city came from smoky BC, while air at 1000 meters were from eastern WA--both sources of smoke.

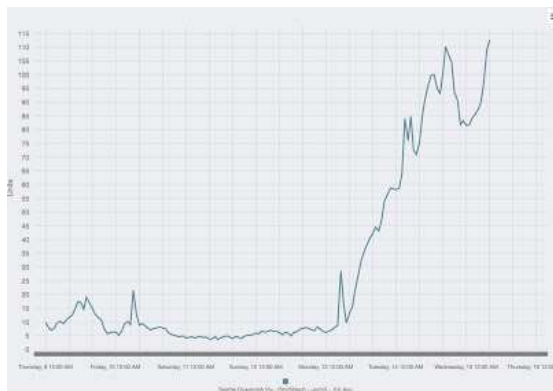


High pressure aloft amplified just offshore, resulting in strong downward motions in the lower atmosphere, which produced a **subsidence inversion** from the surface up to about 3000 ft. The inversion (temperature increasing with height) was very obvious in the balloon soundings at Quillayute, on the WA coast, and from the Seattle profiler (see below). Inversions act as atmospheric lids, preventing the smoke from mixing out during the day.



In short, we had the "perfect storm" for wildfire smoke around western Washington. Lots of fires around us, a meteorological situation that pushed the smoke to low levels, and the development of an inversion that kept the smoke in place.

As I write this (10 AM), the air quality in Seattle is getting even worse (see plot)



EPA's AIRNOW site provides the five worst air quality locations in the U.S. each day. Well, today the Northwest possess ALL FIVE of these sites:



Chelan has a startling value of 211, with the rest right behind.

Incredibly, historically bad air and unhealthy for all. No running for me today. Expect very slow improvement on Thursday.

NWS Facebook:

This satellite pictures looks very similar to yesterday's. We do have some monsoonal moisture moving from Oregon into Washington tonight. There have been some very isolated lightning strikes near Bend, OR. That moisture isn't suppose to move into our area until Thursday late morning. We are crossing our fingers for some relief to the smoke and haze...mainly for central WA where they will see westerly winds tomorrow evening. Unfortunately, that blows the smoke from the Cascade fires into eastern WA...



NASA EOSDIS Worldview Satellite:



August 16, 2018

SRCAA Webpage Augusta PM 2.5:



Augusta PM 10:





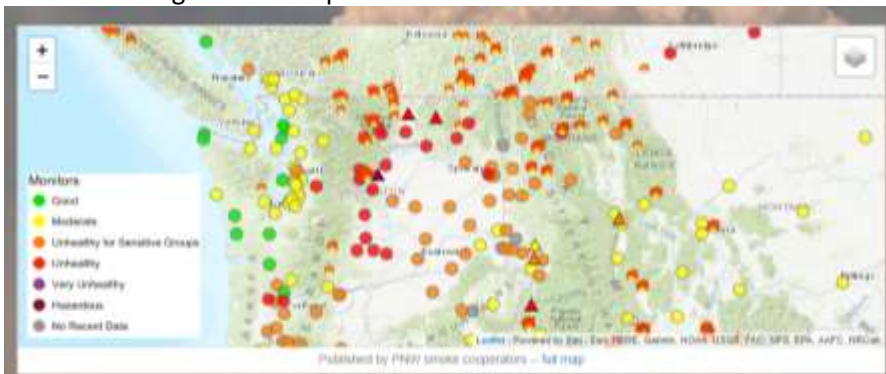
SRCAA Facebook:

We're on our fourth day of waking up to "Unhealthy/Red" air quality. This means that everyone, especially sensitive groups, should limit time spent outdoors.

Hourly updates to air quality can be found at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



WA Smoke Blog and Fire Map:



### Breathe a Little Fresh Air... Please!

A lot of Western Washington saw the smoke clear out last night and through this morning. The air quality is in the **Good** to **Unhealthy for Sensitive Groups** range in most western locations and it should clear up even more through today.

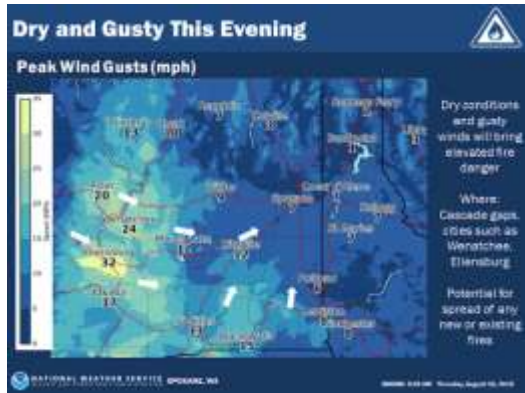


**PM2.5 Across Washington (8 - 9 am; Thursday)**

This westerly flow that we are experiencing should also bring some momentary relief Friday evening for residents in counties like Kittitas, Grant, Benton, Franklin, and Walla Walla. Neighboring counties may also see a bit of

clearing. Air quality in central and eastern Washington will vary, but with the nearby fires, residents in Chelan, Douglas, and Okanogan counties should expect continued smoky conditions through the weekend.

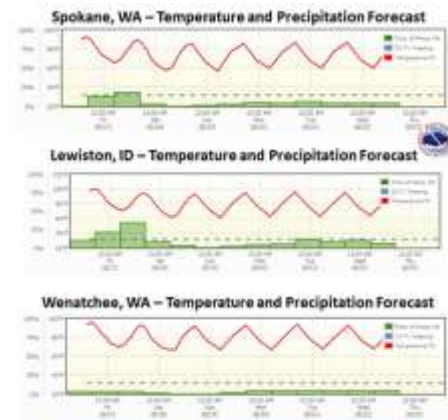
Unfortunately, these winds also mean there is a potential for fire growth...



And, now for the really bad news, the forecast for Sunday night is for winds from the north which could add more smoke from Canada into the region.

NWS Facebook:

We have good news and bad news. The good news is that we don't foresee any major warm ups the likes of which we saw last week. The bad news is there's little chance of rain over the next several days [#wawx](#) [#idwx](#)



NWS Facebook:

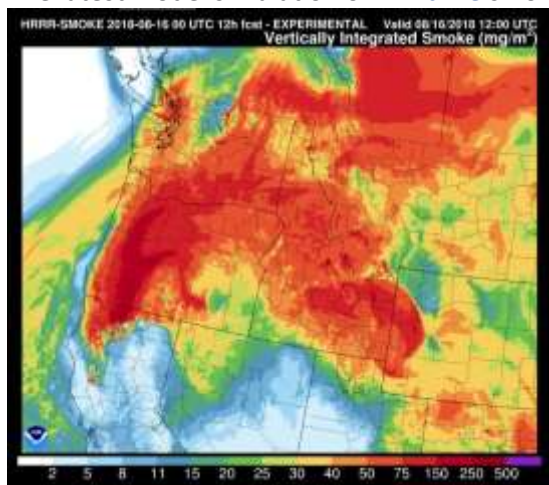
A Red Flag Warning will be in effect for dry lightning tonight through Friday morning for the north Idaho Panhandle, eastern Washington Palouse, and Spokane area [#wawx](#) [#idwx](#)





NWS Facebook:

The latest model simulation of #wildfire smoke east of the Cascades - 5AM today to 5AM Friday



## August 17, 2018

SRCAA Website Augusta PM 2.5:

Spokane - Augusta & Fiske



Augusta PM10:

Spokane - Augusta & Fiske

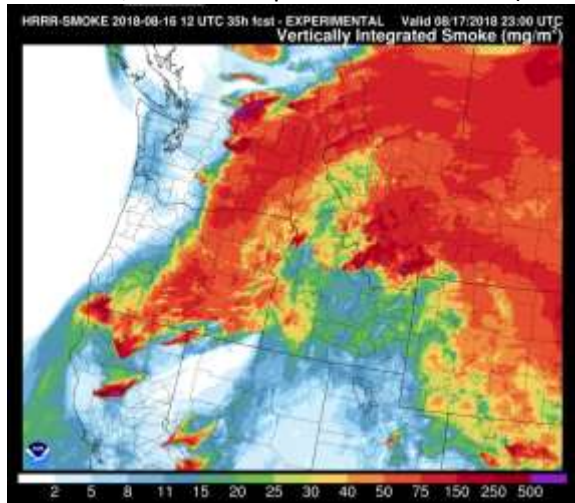


Turnbull PM 10:



NWS Facebook:

Here's your latest model simulation of [#wildfire](#) smoke east of the Cascades - 5AM today to 5AM Saturday. If this holds, the east slopes could see some (short lived) relief from the poor air quality! [#BreatheDeep](#)



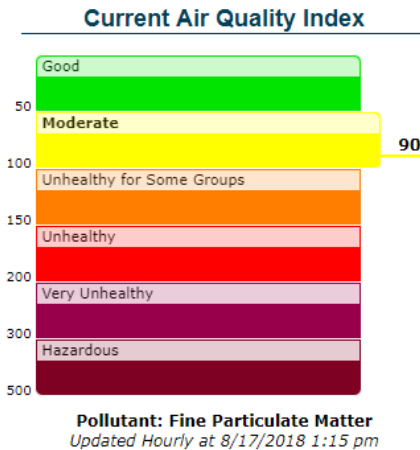
SRCAA Facebook:

We're seeing some wildfire smoke clearing this morning. Currently, we're at an air quality level of "Unhealthy for Sensitive Groups/Orange". Depending on winds, this could change. Be sure to check hourly readings at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



SRCAA Facebook:

Wahoo! We're finally back to "Moderate/Yellow" air quality. But -- it's important to remember that conditions can rapidly change. You can check hourly air quality information at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



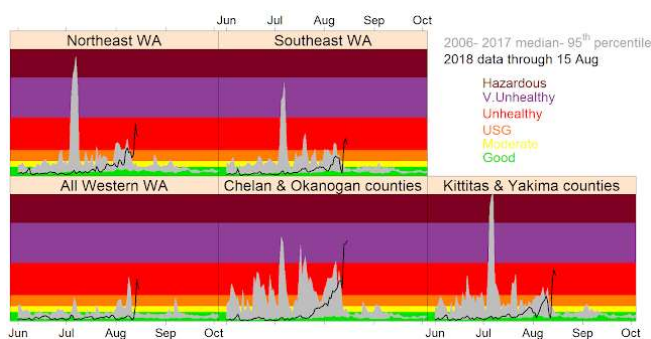
## **August 18, 2018**

WA Smoke Blog:

[While waiting for BC smoke scene #2, lets compare this year's smoke with past years](#)

Yes, you read that right. Lotsa BC smoke poised to overrun the state again. But first things first.

Here is a comparison of how the 2018 wildfire smoke impacts (through 15 August) compare with past years.



The gray shading reflects the typical range of air quality conditions over the last 11 wildfire seasons. In more precise techno-talk, it is the median through the 95th percentile. You can see roughly when each area experienced its smoke episodes in the past. The black lines show how 2018 has progressed thus far. The background shading shows the intensity of smoke.

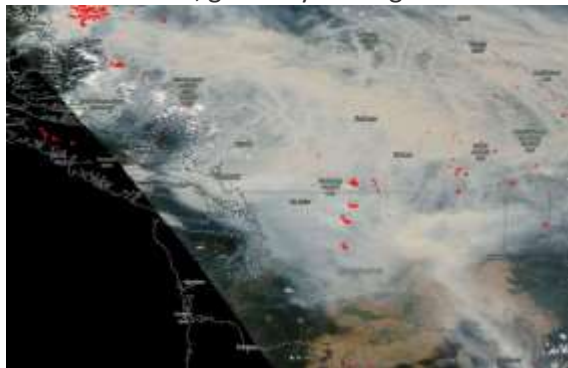
So all of western Washington for example, experienced smoke impacts for longer and earlier in past summers (mostly 2017), than 2018. But that pales in comparison with what Okanogan and Chelan counties have routinely endured in the past: in fact, this year has been a little mellower for them, although still pretty brutal. Similar conclusions can be drawn about other areas.

**What's the take home message?** That someone else had/ has it worse, so quit complaining and tough it out? Far

from it! Wildfire smoke impacts, even at low levels are detrimental to human health and our readers are strongly encouraged to familiarize themselves with the health-protection resources on this blog.

### What about that BC smoke?

This is where things get ugly and stay ugly through mid- week or so. This afternoon's satellite picture shows a lot of smoke overhead, gradually moving south-southwest (red dots are fires).



LOTS of smoke to the north and the forecast shows it engulfing the state by tomorrow. Here's one model's prediction surface level smoke on Sunday night:

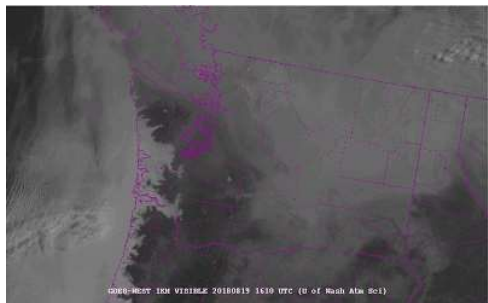


Chances are slim that there will be a natural clean air shelter anywhere in the state through Wednesday. All the more reason to be diligent about minimizing time outdoors, donning N95 face masks, running A/C's in recirculation mode (temperatures are likely to soar early this week but smoke aloft will shave off a few degrees), or investing in an air purifier which does not produce indoor ozone.

Cliff Mass Blog:

[A Smokestorm is Imminent for Western Washington](#)

**The smoke is moving in aloft (see satellite picture). This movement will accelerate later today. Smoke will surge in first aloft and then down to the surface. Air quality is still moderate near the surface. More later.**



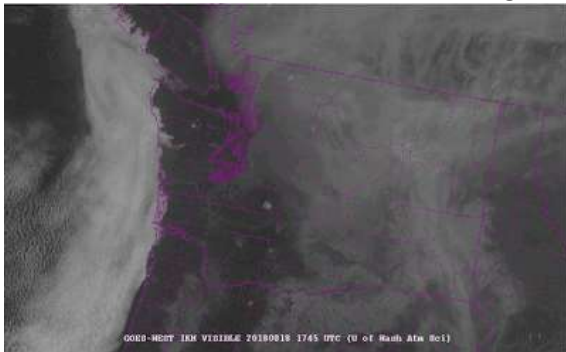
You have heard of rainstorms, snowstorms, and windstorms. It is time to create another one: the **smokestorm**.

And tonight and tomorrow one will hit western Washington, with air quality degrading rapidly to levels that may even be worse than Wednesday of the past week. Vulnerable folks need to be prepared for this onslaught of smoke.



Large fires are now burning in British Columbia and eastern Washington, injecting substantial smoke into the air. With generally westerly flow aloft during the past few days, western Washington has been protected, but the winds aloft are turning northerly and northeasterly, resulting in the smoke blowing directly towards us.

The visible satellite image around 10 AM Saturday shows lots of smoke over eastern WA and southeastern BC that is extending to the Cascades and even NW Washington. Animations show this smoke moving directly towards northwest WA. Low clouds are evident along the coast.

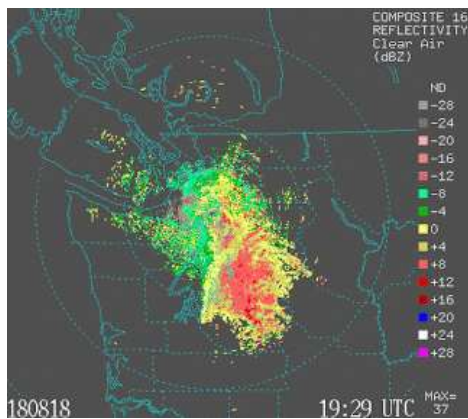


The MODIS satellite imagery around noon Saturday shows the approaching smoke more clearly:



Want to see something that is really amazing? The smoke is dense enough to be picked up by the NWS weather radar (at Camino Island). Here is an example around 12:30 PM Saturday, showing composite reflectivity (the highest amount of returned signal in the vertical column that is being sampled by the radar).

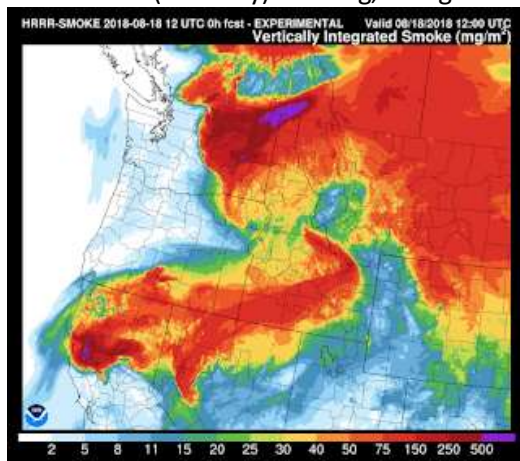




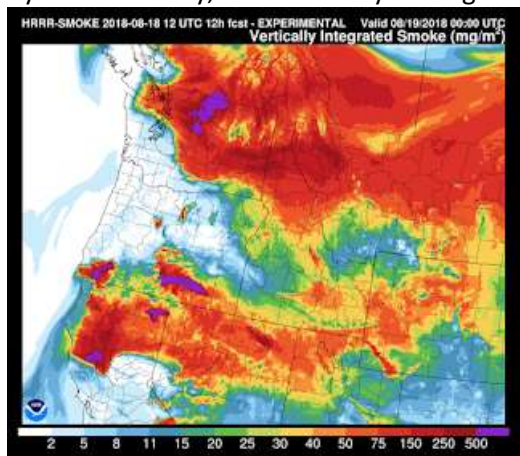
High resolution models predict increasing northeasterly and easterly flow aloft, bringing the smoke into us. Let me show you the current forecasts from the NOAA HRRSMOKE system for the next 36.

First, vertically integrated smoke (total smoke in a vertical column). Red indicated large values and purple is extremely high.

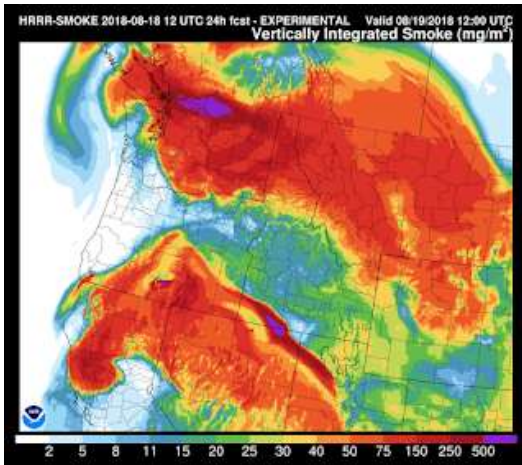
At 5 AM this (Saturday) morning, all is good in western Washington, but high values loom to the north and east.



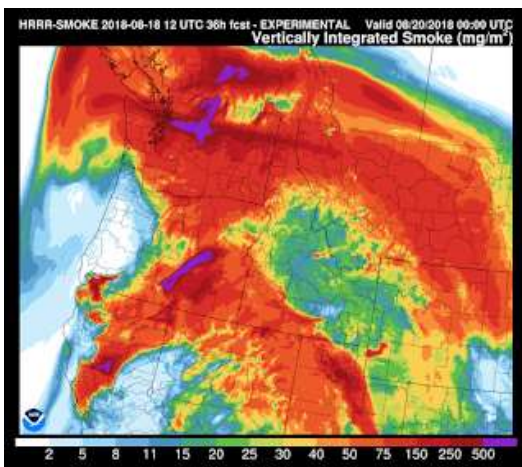
By 5 PM Saturday, smoke is really moving into NW Washington.



By 5 AM Sunday most of western WA is covered with some very high values extending into northwest Washington from the fires on the other side of the Cascades.

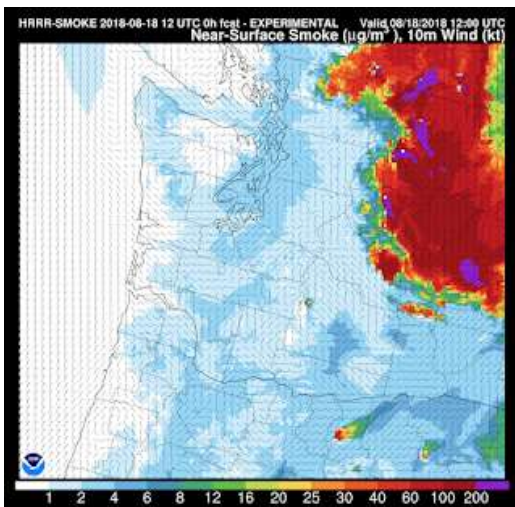


Even worse by Sunday at 5 PM.

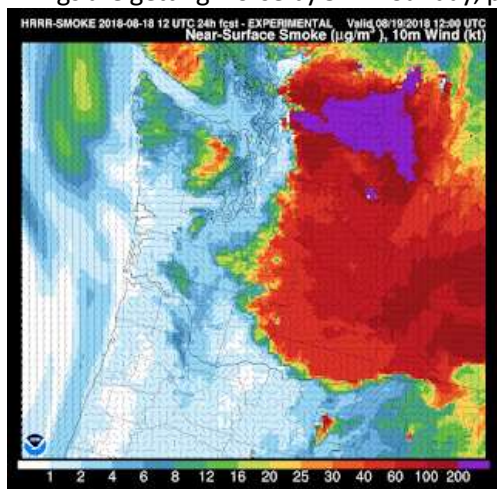


Now that is vertically integrated smoke....smoke that makes the sun dim and hazes out our views. Much of this smoke is aloft. What about smoke at the surface? Let's take a look!

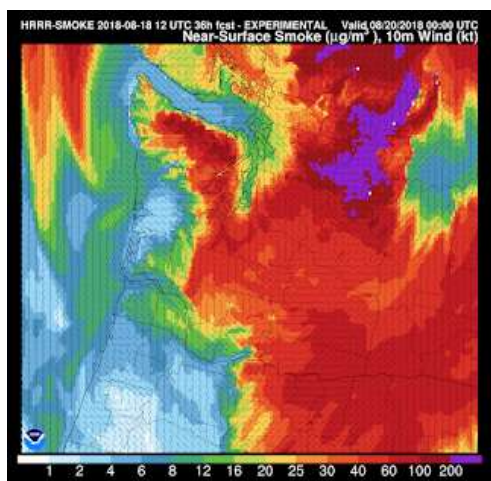
5 AM Saturday--a little haze but nothing serious.



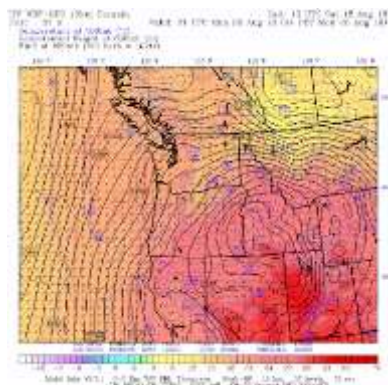
Things are getting worse by 5 AM Sunday, particularly above roughly 1000 ft.



And substantial smoke reaches the surface by 5 PM Sunday.



Although HRRR smoke only goes to 36h, I suspect things will get much worse on Monday. The UW WRF model predicts strong easterly/northeasterly flow at 2 PM Monday (see map at 850 hPa--about 5000 ft). The gunk will be streaming over the mountains right into us. Not good.



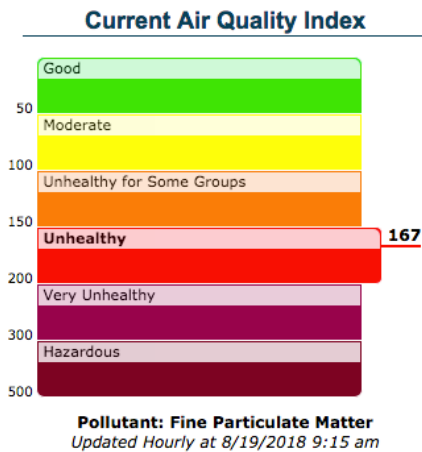
Monday could be an extremely smoky day and I expect that my colleagues in the National Weather Service will put out an air quality alert today. They won't use the term **smokestorm**, but the threat to vulnerable folks will be serious. One exciting aspect of the recent smoke events is the quality of our new smoke models and our ability to warn folks of such serious, health-challenging events. If you can't stop the fires, you can at least warn folks about the smoke impacts and allow them to take protective steps.

Finally, an excellent place to go for real time air quality information here in Puget Sound is the [Puget Sound Clean Air Agency](#). The EPA [AirNow](#) site is also excellent.

## August 19, 2018

SRCAA Facebook:

The reprieve was short lived and, unfortunately, the wildfire smoke is back. As of Sunday morning, air quality is in the "Unhealthy/Red" category. Be sure to check hourly updates at [spokanecleanair.org/current-air-quality](http://spokanecleanair.org/current-air-quality)



SRCAA Facebook:

With air quality at the "Hazardous/Maroon" level, it's very important to keep yourself safe. [Spokane Regional Health District](#) provides guidance on symptoms from exposure to wildfire smoke.

## IS THE AIR SAFE?

Check air quality conditions at [spokanecleanair.org/](http://spokanecleanair.org/)

	<b>GOOD</b> Air pollution is so low so there is little health risk. It's a great day for everyone to enjoy the outdoors!	<b>SENSITIVE GROUPS INCLUDE:</b> <ul style="list-style-type: none"><li>• People with health conditions such as:<ul style="list-style-type: none"><li>- Asthma, COPD, diabetes, &amp; other heart/lung diseases</li><li>- Respiratory illnesses &amp; colds</li><li>- Stroke survivors</li></ul></li><li>• Children under 18 &amp; adults over 65</li><li>• Pregnant women</li><li>• People who smoke</li></ul> <b>KNOW THE SYMPTOMS:</b> <ul style="list-style-type: none"><li>• Watery or dry eyes</li><li>• Coughing/sneezing</li><li>• Throat &amp; sinus irritation</li><li>• Headaches</li><li>• Shortness of breath</li><li>• Chest pain</li></ul> <p><i>If you are experiencing serious symptoms, seek immediate medical attention.</i></p>
	<b>MODERATE</b> People with health conditions should limit spending any time outdoors & avoid strenuous outdoor activities. They may begin to have worsened symptoms.	
	<b>UNHEALTHY FOR SENSITIVE GROUPS</b> All of the above &: All sensitive groups should limit spending any time outdoors. People with health conditions may have worsened symptoms. Healthy people may start to have symptoms.	
	<b>UNHEALTHY FOR EVERYONE</b> Everyone, especially sensitive groups, should limit time spent outdoors, avoid strenuous activities outdoors, & choose light indoor activities.	
	<b>VERY UNHEALTHY FOR EVERYONE</b> Everyone should stay indoors, avoid all strenuous activity, close windows & doors if it's not too hot, set your AC to recirculate, & use a HEPA air filter if possible.	
	<b>HAZARDOUS FOR EVERYONE</b> All of the above &: People with heart or lung disease, or those who have had a stroke, should consult their healthcare provider about leaving the area. Follow burn bans and evacuation orders.	

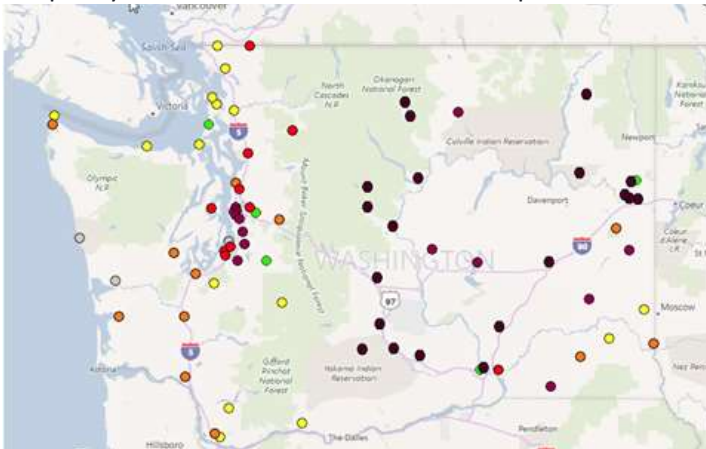
Air pollution from dust, vehicles, wildfires, & industries can seriously impact your health. For more health information, visit [uhd.org/wildfire/smoke](http://uhd.org/wildfire/smoke)





NWS Facebook:

Hazardous air quality in nearly all of eastern WA this evening. Even Puget Sound area is now seeing declining air quality. Eastern WA should see some improvement tomorrow.



WA Smoke Blog:

[Very Large Smoke Plumes Across Pacific Northwest](#)

Very large smoke plumes can be seen all across the Pacific Northwest. NOAA describes it as such:

"The ongoing wildfire activity affecting portions of the western United States and western Canada continues to produce enormous amounts of smoke that covers most of Canada and the northern portion of the United States. The areas of densest smoke extend from western and southern British Columbia across Alberta, Saskatchewan, Manitoba, Ontario, and southern Quebec in Canada and northern California, southern Oregon, all of the northern border states from Washington to Michigan, Wisconsin, Iowa, Illinois, and Missouri in the United States."



**MODIS Aqua Satellite Image - Saturday Afternoon**

PM2.5 monitoring has shown **Good** to **Unhealthy for Sensitive Groups** air quality across Western, South-Central, and South-East Washington counties today. Continued **Unhealthy** to **Hazardous** conditions have been monitored in the Central and North-Eastern counties. Conditions look to get progressively worse for western Washington as well as most other counties over the next few days.

A public service announcement graphic with a black header that reads "SMOKE RETURNS TONIGHT AND SUNDAY". Below the header, there is a text box on the left explaining that smoke from wildfires in British Columbia and southern Washington is being blown back into western Washington. To the right of this text is a color-coded Air Quality Index (AQI) scale ranging from 0 (Green) to 10 (Purple). Further right, there is a section titled "Wildfires Are a Health Risk" with a list of health effects: "Irritate your eyes", "Irritate your respiratory system", "Aggravate asthma", and "Asthma attacks". At the bottom right, there are logos for the National Aeronautics and Space Administration (NASA) and the United States Environmental Protection Agency (EPA).

Please protect you and your family from smoke if it is impacting your area. The [Department of Health](#) has relevant information [here](#).

Cliff Mass Blog:

### Smoke Now Pushing Into Western Washington

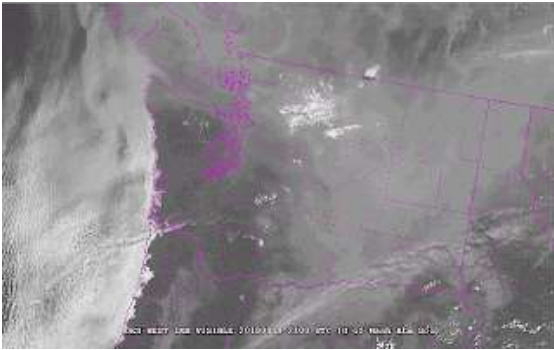
During the next 12 hours there should be a major influx of wildfire smoke into the lower elevations of western Washington.

The MODIS satellite imagery around noon showed very dense smoke over eastern WA and the north Cascades, with lesser but substantial smoke now over northwest Washington, with a thinning from Seattle southward.





The 2PM image from the GOES geostationary satellite, indicates the smoke is slowly moving southward west of the Cascade crest.



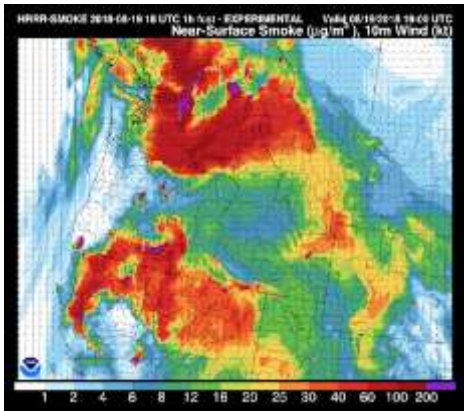
The backdrop of Seattle is getting murkier over time.



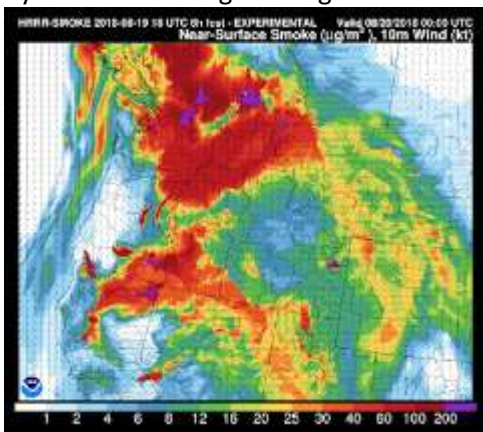
As of noon, air quality was moderate over the Puget Sound area, except for rapidly worsening conditions at Darrington (see below)



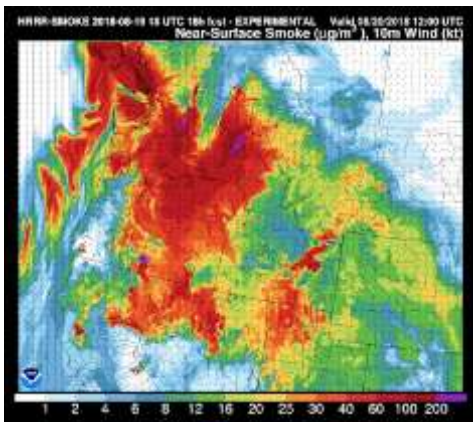
Unfortunately, if our models are correct, low-level air quality is about to get much worse. The NOAA/NWS HRRR smoke model prediction for near-surface smoke showed high values (red-purple) over the Cascades and eastern WA at noon (1900 UTC)



By 5 PM it is moving into Puget Sound

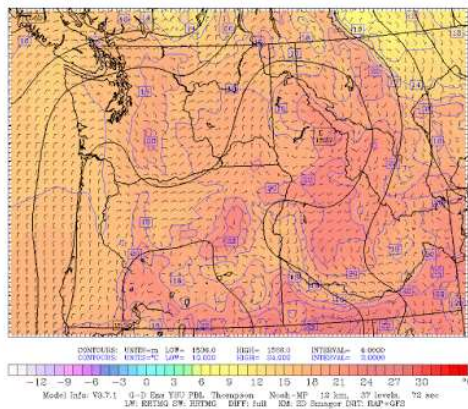


And fully entrenched at 5 AM Monday. These forecasts are for higher concentrations than in the forecasts for last Wednesday, our last big smoke day.



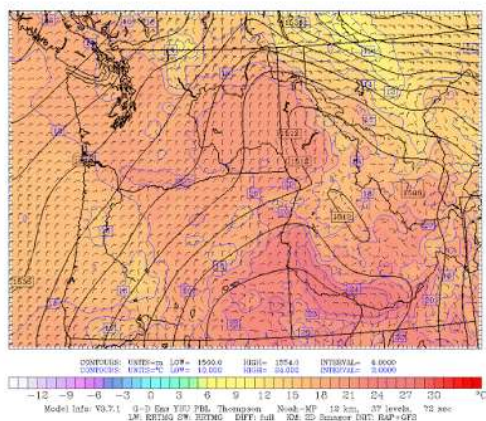
The movement of smoke will be supported by a change in the winds aloft. The following maps the predicted winds (barbs) and temperature (color) at around 5000 ft (850 hPa). Major strengthening of northerly to easterly winds during the next 24 h. The first map is for 11AM Sunday....weak wind from the SE.

UW WRF-GFS 12km Domain: Valid: 18 UTC Sun 19 Aug 18 Init: 12 UTC Sun 19 Aug 18  
 Post: 0 h  
 Temperature at 850 mb (°C)  
 Geopotential Height at 850mb (m) Wind at 850mb (full barb = 10kts)



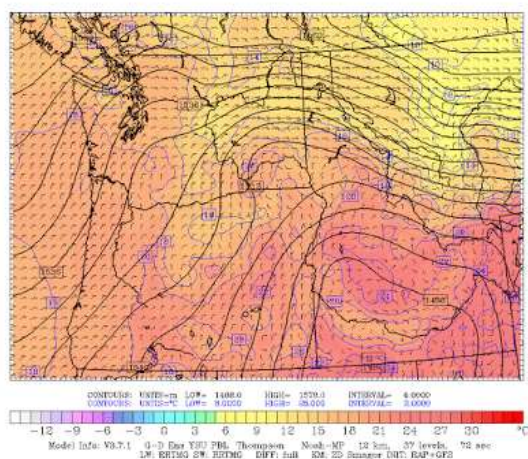
By 11 PM, moderate NE winds will be blowing smoke right into us.

UW WRF-GFS 12km Domain: Valid: 06 UTC Mon 20 Aug 18 Init: 12 UTC Sun 19 Aug 18  
 Post: 18 h  
 Temperature at 850 mb (°C)  
 Geopotential Height at 850mb (m) Wind at 850mb (full barb = 10kts)



And easterly flow will be in place at 11 AM Monday....pushing the smoke our way. Not good.

UW WRF-GFS 12km Domain: Valid: 18 UTC Mon 20 Aug 18 Init: 12 UTC Sun 19 Aug 18  
 Post: 30 h  
 Temperature at 850 mb (°C)  
 Geopotential Height at 850mb (m) Wind at 850mb (full barb = 10kts)



So get rid for a major smoke event. No, I am not going call it Smokezilla.



NWS Blog:

### **Weekend of Smoke: Aug 18-19**

Washington and north Idaho experienced the worst smoke of the summer (so far) during the weekend of August 18-19. The smoke reduced visibility to a mile or less in many areas and drove air quality into the "unhealthy" or "hazardous" range across the Pacific Northwest. By Sunday, the smoke forced many residents indoors. Reduced visibility from the smoke even caused delays at Seatac airport.

The smoke produced an eerie feeling of darkness during the middle of a summer day. Motorists used headlights throughout the day due to the poor visibility. Check out the picture of Coeur d'Alene at 4 PM on Sunday the 19th.



August 19 at 4 PM: Vehicles Using Headlights. Idaho Transportation Department Camera in Couer D'Alene ID

At times, it was tough to see the sun through the thick veil of smoke. The sun is the little bright dot to the left of the radar tower. This picture was taken at the National Weather Service Office just west of Spokane at 6 PM on the 19th. The nearby Spokane International Airport reported 1 mile of horizontal visibility at the time of this photo.



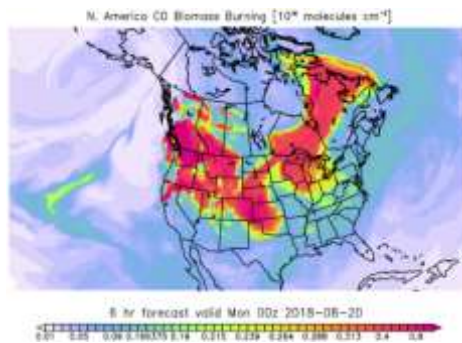
August 19 at 6 PM: NWS Spokane.

Where are the fires producing all of this smoke? The map below shows the "hot spots" detected by satellites. The red and orange dots indicate active fires across British Columbia, Washington, and Oregon. Other large fires are burning over northern portions of Vancouver Island.





The map below is a computer simulation produced by NASA that forecasts smoke in the atmosphere. The oranges, reds, and pinks indicate high concentrations of smoke. Atmospheric winds have created a huge reservoir of smoke over the western United States with some of the highest concentrations of smoke over Washington, north Idaho, and southern British Columbia.



NASA/GMAO - GOES-5 Forecast CO Biomass Burning valid 00 UTC 20 August, 2018

Air quality across the Pacific Northwest was affected by the smoke. The red dots on the map below represent sensors reporting "Unhealthy" air quality. The purple and dark purple dots are indicative of "Very Unhealthy" and "Hazardous" air quality. The map also has active fires plotted with flame icons.



August 19 at 7 PM: Air Quality Sensors and Active Fires. Pacific Northwest Smoke Cooperators

This high resolution MODIS satellite image shows the thick grey smoke over the Pacific Northwest. The image was taken around noon PDT, and it shows how the air in southeast Washington and the southern Idaho Panhandle was "cleaner" than central and northeast Washington.

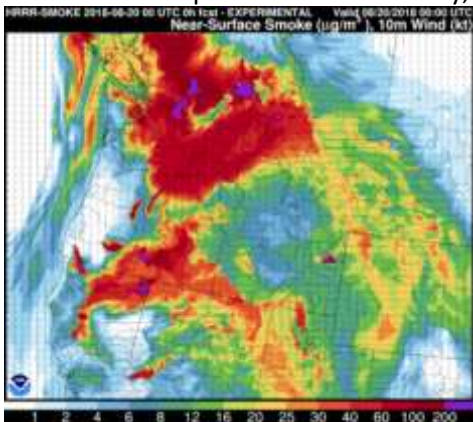


MODIS Satellite Imagery: August 19 Noon PDT.

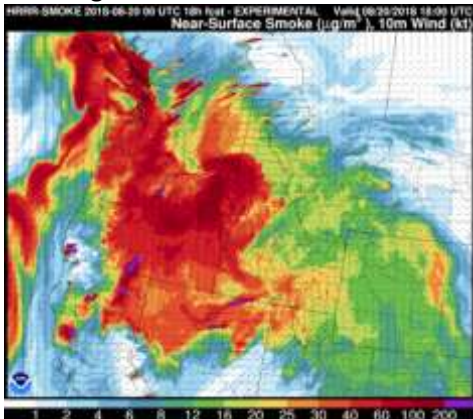
Places like Pullman and Lewiston not only experienced more sunshine on Sunday (Aug 19), but also got much hotter than places shrouded in smoke. The Pullman airport had a high temperature of 90 degrees on Sunday, and Lewiston topped out at 97 degrees. Spokane is only 70 miles from Pullman and was 13 degrees cooler with a high of 77 degrees.

By the evening, smoke spread into southeast Washington and the southern Idaho Panhandle. This animation from Pullman WA shows a wall of smoke arriving before sunset.

When will our smoke situation improve? North Idaho and much of eastern Washington should experience improved air quality by mid to late morning on Monday. The arrival of a cold front will produce gusty north/northeast winds. "Cleaner" air from central Canada combined with the mixing from 15 to 25 mph winds should push smoke toward Oregon and western Washington on Monday. The three images below is a smoke forecast model. The initial is the model smoke depiction for 5 PM Sunday, August 19th.

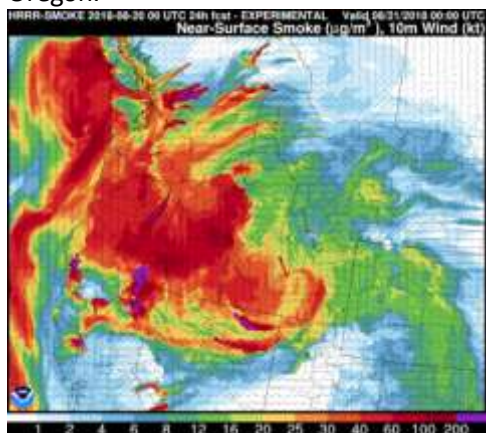


By 11 AM on Monday, increasing northeast winds should push the thickest smoke into Oregon and western Washington.





By 5 PM on Monday, the reds and pinks representing thick surface smoke should be pushed into western and central Oregon.



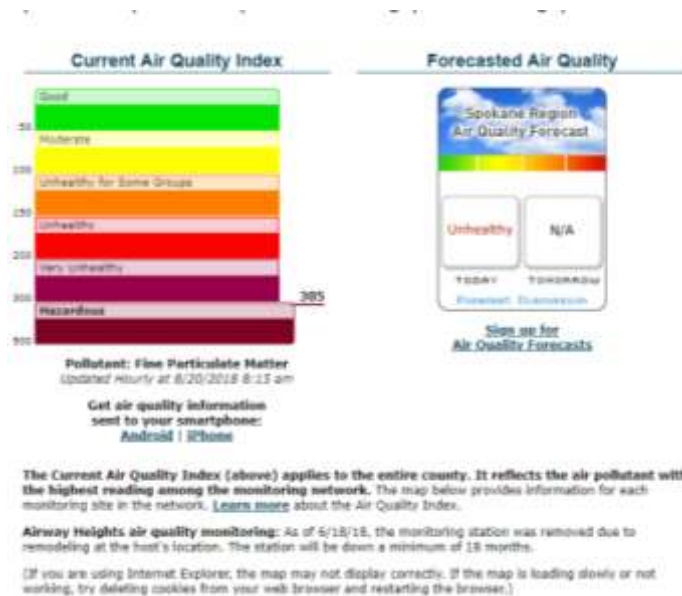
NASA EOSDIS Worldview satellite:



### **August 20, 2018**

SRCAA Website:

Sunday night AQI reporting from AirNow and SRCAA had discrepancies, air now was about 60 points higher. For example, 377 vs. 305.



Augusta PM 2.5:



Augusta PM 10:



Turnbull PM 10:



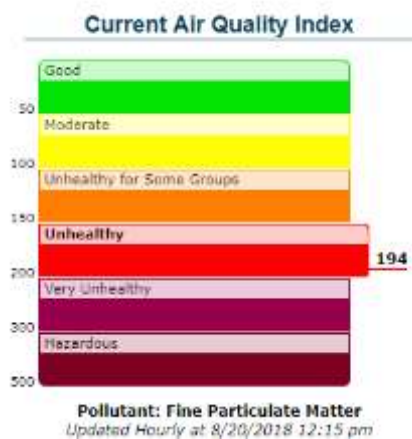
SRCAA Website Update:

**Update:** Monday, August 20, 9:15 am: Current air quality is in the “Hazardous” or “Maroon” level on the Air Quality Index for fine smoke particles. Click [here](#) for current information and forecast.

Hazardous 301-500	Everyone	<b>Everyone:</b> <i>Avoid all physical activity outdoors.</i>  <b>Sensitive Groups:</b> Remain indoors and keep activity levels low. Follow tips for keeping particle levels low indoors.
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SRCAA Facebook:

The air is moving and we're seeing some improvement. Current readings have the air quality at "Unhealthy/Red". Hourly updates can be found at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



SRCAA Facebook:

According to the Washington Smoke Information blog, we're not likely to see the smoke clearing until Friday. <http://wasmoke.blogspot.com/.../tell-us-plainly-when-will-smo...>



Tell us plainly: when will the smoke clear?

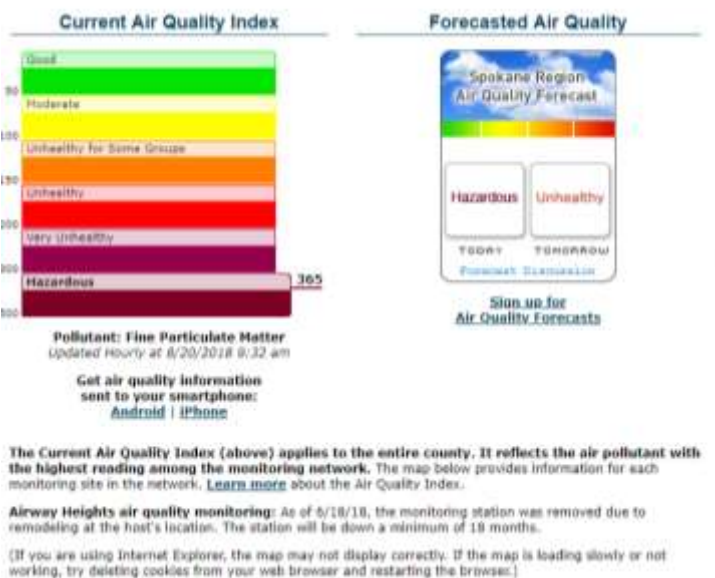
Harsh reality first : other than some temporary relief in some places experiencing strong winds today (see maps below), no significant smoke...

WASMOKE.BLOGSPOT.COM

Airnow:

Spokane Regional Clean	AirNow - Highest Current	https://airnow.gov/state/WA/index.cfm
Environmental Protection Agency [US]	https://airnow.gov/state/WA/index.cfm	
Apps	Spokane Regional Clean	National Weather Service
My RR	NACAA	EDY
Darrington, WA	194	observed at 7:00 PDT
Everett-Marvillie-Lynnwood, WA	74	observed at 7:00 PDT
Inclemens, WA	209	observed at 7:00 PDT
Kennecook, WA	173	observed at 7:00 PDT
Leavenworth, WA	217	observed at 7:00 PDT
Longview, WA	74	observed at 7:00 PDT
Makah Indian Tribe of Makah Indian Reservation, WA	26	observed at 7:00 PDT
Maple Falls, WA	119	observed at 7:00 PDT
Moses Lake, WA	160	observed at 7:00 PDT
Mount Vernon, WA	62	observed at 7:00 PDT
Mt. Rainier, WA	51	observed at 7:00 PDT
Naselle, WA	159	observed at 7:00 PDT
Oak Harbor, WA	23	observed at 7:00 PDT
Olympia-Lacey-Tumwater, WA	66	observed at 7:00 PDT
Omak, WA	175	observed at 7:00 PDT
Port Angeles, WA	182	observed at 7:00 PDT
Port Townsend, WA	64	observed at 7:00 PDT
Pullman, WA	180	observed at 7:00 PDT
Raymond, WA	74	observed at 7:00 PDT
Seattle-Bellevue-Kent Valley, WA	177	observed at 7:00 PDT
Shelton, WA	51	observed at 7:00 PDT
Spokane, WA	377	observed at 7:00 PDT
Spokane Tribe of Spokane Reservation, WA	197	observed at 7:00 PDT
Tacoma-Puyallup, WA	167	observed at 7:00 PDT
Tripoli, WA	213	observed at 7:00 PDT
Vancouver, WA	68	observed at 7:00 PDT

SRCAA Website Attempted to fix calculation:

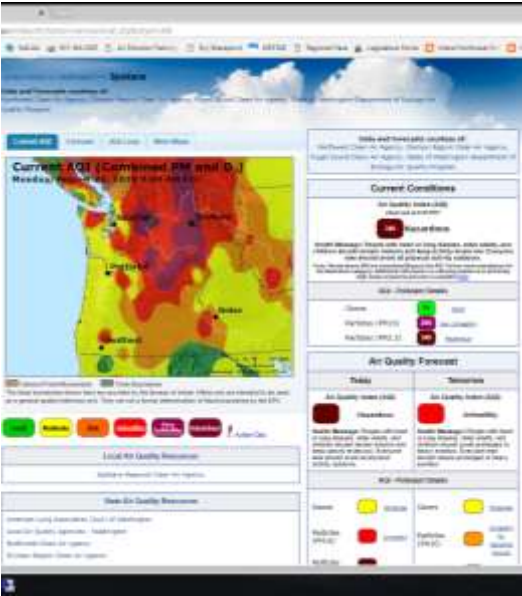


Augusta PM 2.5:





Airnow:



Airnow WA List:

Colville WA	252	observed at 9:00 PDT
Confederated Tribes & Bands of Yakama Nations WA	204	observed at 9:00 PDT
Davenport WA	194	observed at 9:00 PDT
Everett-Marysville-Lynnwood WA	109	observed at 9:00 PDT
Inchelium WA	204	observed at 9:00 PDT
Kennewick WA	173	observed at 9:00 PDT
Leavenworth WA	216	observed at 9:00 PDT
Louiseville WA	76	observed at 9:00 PDT
Makah Indian Tribe of Makah Indian Reservation WA	53	observed at 9:00 PDT
Marble Falls WA	122	observed at 9:00 PDT
Mosier Lake WA	169	observed at 9:00 PDT
Mount Vernon WA	66	observed at 9:00 PDT
Mt. Rainier WA	51	observed at 9:00 PDT
Naselle WA	161	observed at 9:00 PDT
Oak Harbor WA	33	observed at 9:00 PDT
Olympia-Lacey-Tumwater WA	68	observed at 9:00 PDT
Oriskany WA	166	observed at 9:00 PDT
Port Angeles WA	205	observed at 9:00 PDT
Pullman WA	181	observed at 9:00 PDT
Raymond WA	68	observed at 9:00 PDT
Seattle-Bellevue-Kent Valley WA	166	observed at 9:00 PDT
Shelton WA	53	observed at 9:00 PDT
Spokane WA	349	observed at 9:00 PDT
Spokane Tribe of Spokane Reservation WA	197	observed at 9:00 PDT
Sunnyside WA	228	observed at 9:00 PDT
Tacoma-Puyallup WA	171	observed at 9:00 PDT



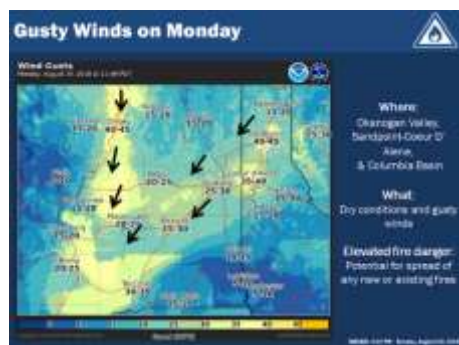
## WA Smoke Blog and Fire Map:



### Tell us plainly: when will the smoke clear?

**Harsh reality first:** other than some temporary relief in some places experiencing strong winds today (see maps below), no significant smoke clearing expected before Wednesday for most of the state. After that, Western WA starts to clear on Thursday, eastern WA on Friday.

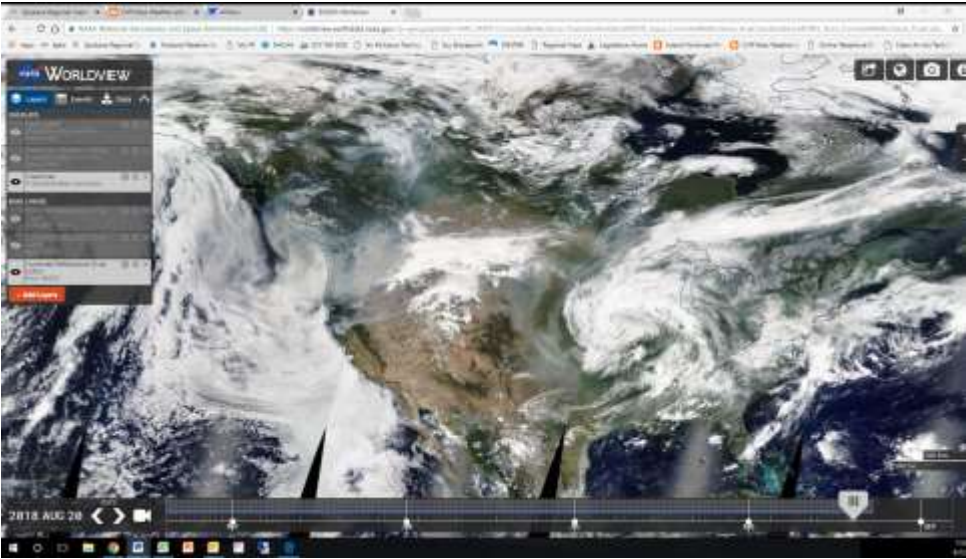
Widespread Unhealthy conditions are expected statewide, with all of eastern WA only reporting Very Unhealthy and Hazardous air. Western Washington is littered with Good to Very Unhealthy conditions. Some strong winds are expected today (see areas in National Weather Service maps below) and while this will alleviate the smoke for a while, they also increase fire danger substantially.



Medium range weather models suggest southwest winds will some clean air to western WA by Thursday and in eastern WA by Friday, perhaps keeping it all clean through the weekend, except close to major fires.

Please note that the map of air quality monitors above has been slow to refresh, given the high demand for data. The Dept of Ecology's [air quality monitoring data map](#) is a good alternative.

NASA EOSDIS Worldview Satellite:



August 21, 2018

SRCAA Website Augusta PM2.5:



Augusta PM10:



## Airnow WA List:

Kamiah, WA	82	observed at 6:00 PDT
Leavenworth, WA	155	observed at 6:00 PDT
Lemah, WA	154	observed at 6:00 PDT
Makah Indian Tribe of Makah Indian Reservation, WA	178	observed at 6:00 PDT
Marble Falls, WA	136	observed at 6:00 PDT
Moses Lake, WA	97	observed at 6:00 PDT
Mount Vernon, WA	140	observed at 6:00 PDT
Abn. Kamas, WA	44	observed at 6:00 PDT
Naselle, WA	140	observed at 6:00 PDT
Oak Harbor, WA	118	observed at 6:00 PDT
Okanogan-Lake Umbagog, WA	185	observed at 6:00 PDT
Omak, WA	182	observed at 6:00 PDT
Port Angeles, WA	168	observed at 6:00 PDT
Port Townsend, WA	164	observed at 6:00 PDT
Pullman, WA	62	observed at 6:00 PDT
Raymond, WA	111	observed at 6:00 PDT
Seattle-Bellevue-Kirk Valley, WA	181	observed at 6:00 PDT
Shelton, WA	163	observed at 6:00 PDT
Spokane, WA	128	observed at 6:00 PDT
Spokane Tribe of Spokane Reservation, WA	180	observed at 6:00 PDT
Spokane, WA	148	observed at 6:00 PDT
Tacoma-Puyallup, WA	183	observed at 6:00 PDT
Tulsa, WA	171	observed at 6:00 PDT
Vancouver, WA	157	observed at 6:00 PDT
Walla Walla, WA	140	observed at 6:00 PDT
Wenatchee, WA	153	observed at 6:00 PDT

## NWS Facebook:

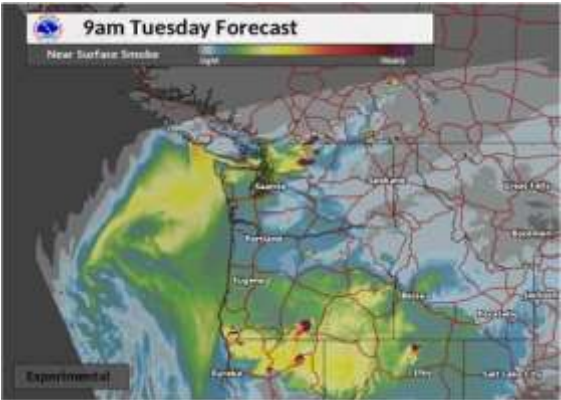
The morning visible satellite image shows just how widespread the smoke is across the Pacific NW, keeping our skies hazy & smoky. Although there have been some improvements in air quality, it will still be a concern today as winds become light, especially near local fires.



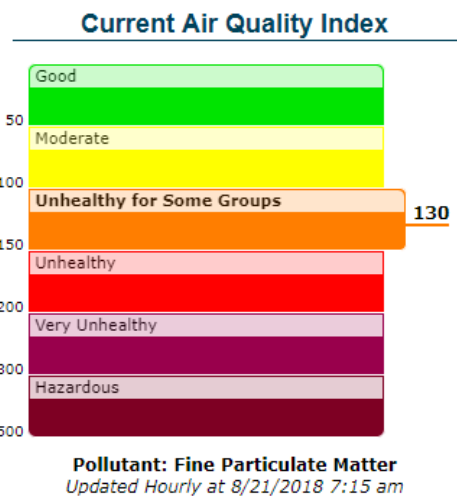
## NWS Facebook:

Here is one experimental computer model's depiction of smoke over the Pacific Northwest over the next 24 hours. A northeast flow appears to keep some of the thicker smoke around the north and west side of Washington, as well as some parts of north Idaho. Overall, however, expect some smoke and haze to continue throughout the region.

Air quality alerts continue, with many remaining in the "unhealthy" category. However conditions may be improving for some through the period.



SRCAA Facebook:  
We're starting off the day in a much better spot than Sunday and Monday. That being said, we're still seeing impacts from wildfire smoke and are currently in the "Unhealthy for Sensitive Groups/Orange" category.  
You can find hourly updates to air quality at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



SRCAA Facebook:  
Spokane Clean Air's "Air Quality" webpage will be briefly unavailable this evening. We estimate the outage to begin at 7:00 pm and last approximately 1 - 2 hours. During this time, please check [www.airnow.gov](http://www.airnow.gov) for air quality updates. Our apologies for the inconvenience.

NWS Facebook:  
A pattern change is on the way! Late Thursday a cold front will move through providing some improving conditions to the smoke and haze. Then this weekend we cool down and by Sunday evening and Monday we have a chance of rain which would further improve conditions!



WA Smoke Blog:

#### [Ash Falls in Seattle ... Some Clearing in Southeast Washington](#)

There were several [reports of ash](#) in the greater Seattle area yesterday, probably from the [Cougar Creek](#) and/or [Crescent Mountain](#) fire. This can be disconcerting, but keep in mind that ash isn't really a health problem. The very fine particles that you can't see (PM2.5) are what cause respiratory and other health problems because they get deep into the lungs. Western Washington will continue to experience **Unhealthy** to **Very Unhealthy** air quality today. Strong westerly winds are predicted for Wednesday afternoon into Thursday. Those winds should push most of this lingering smoke out of Western Washington on Thursday. The coastal region could see some relief on Wednesday evening. Keep in mind, though, that there is a large area of smoke off the coast that will likely blow back over us on Wednesday.

Southeast Washington saw some relief last night because the northeasterly winds carried the smoke towards the rest of the state, with air quality still in the **Moderate** to **Unhealthy for Sensitive Groups** range there. Smoke forecast models predict that the area of relief in Southeast Washington will continue to see some modest clearing. We could see air quality get a bit better today from Yakima to Spokane, but it will be short-lived as smoke is predicted to push back into the region tomorrow. In general, areas in Northeastern Washington should expect to see more smoke throughout the week, despite any clearing that will occur today.

Residents in Chelan, Douglas, and Okanogan counties are so close to multiple fires. So, even with expected clearing for much of the state later this week, those counties should expect continued smoky conditions.



**PM2.5 (Smoke) - Tuesday at 9 a.m.**

Posted by [Farren Herron-Thorpe \(WA Ecology\)](#) at [8/21/2018 10:01:00 AM](#)



WA Smoke Blog:

### [Too many apples-to-oranges comparisons with Beijing](#)

"Our air is worse than Beijing"

"This is the worst air quality in the world"

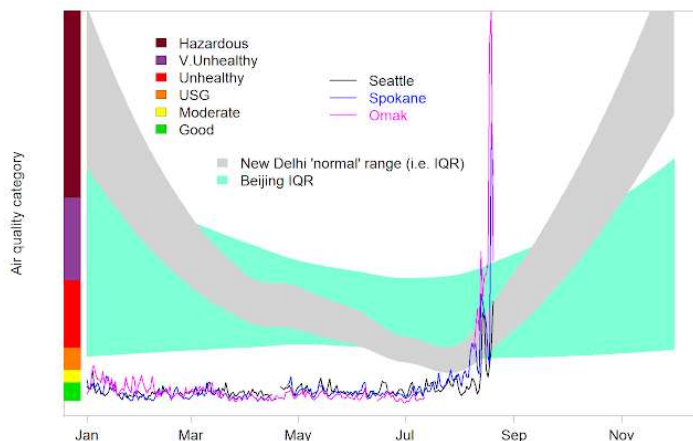
Some variant of these claims have been repeated in the past few days. Are they true? Lets make an apples-to-apples comparison and find out.

If we compare conditions across the world right now, then WA probably has the ignoble distinction of being one of the most polluted places. Here's the global AQ map as of 1PM PDT:



Colors are AQI colors (see legend in plot below). South and east Asia are seeing a lot of reds and maroons, which means a lot of people are exposed to Unhealthy or worse air at this point in time. Washington is in the same abyss, air quality wise. Not good.

Now lets see how air quality at a few WA sites compare with normal patterns seen in Beijing and New Delhi year round. Data from those cities were obtained from air quality monitors at the respective US Embassies, which routinely record very high PM2.5 concentrations. I've defined "normal" as the range between monthly lower and upper quartiles, since the median passes right in the middle of it. This is also known as the interquartile range, or IQR.



The above figure shows how air quality in Seattle, Spokane and Omak have varied from 1 Jan- 20 August 2018, against the backdrop of monthly IQRs in Beijing and Delhi. As can be seen, the latter cities experience terribly compromised air quality primarily in the winter months. And its MUCH worse than what we experience, even during wildfire season. Even though Omak spiked right to the top of Delhi's IQR a few days ago, bear in mind that:

1. Delhi's concentrations are higher than it's own IQRs 25% of the time. Or put another way, Delhi records concentrations higher than Omak's spike, for 3 months of the year.



2. Omak's air is unlikely to remain "Hazardous" for several months.

In spite of our wintertime temperature inversions and woodsmoke concerns, we're still in far better shape at that time of year.

So stacking the relatively "clean" season in Beijing/ Delhi against our "dirtiest" season is not a proper comparison.

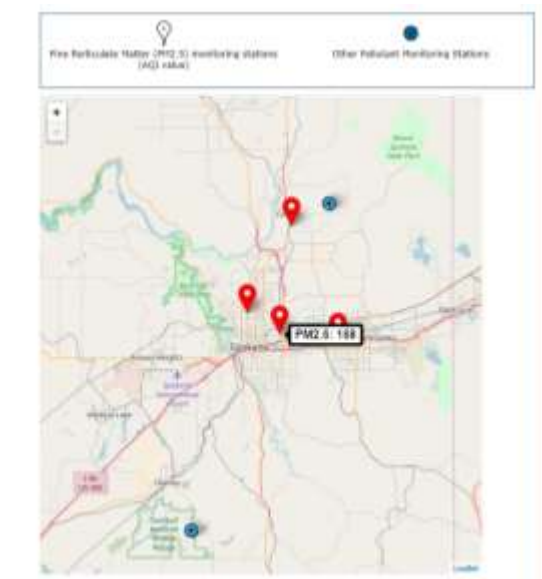
Nevertheless, wildfire smoke- even of relatively short duration- still affects the health of a lot of people. This blog, even the article just below, contains a lot of resources on steps that can be taken to minimize its harmful effects.

NASA EOSDIS Worldview Satellite:



**August 22, 2018**

SRCAA Website switched website over to new map platform at 7p last night:



The screenshot shows the NOAA Hazards and Weather Center website. On the left is a map of the Spokane area with a blue dot indicating the location of the Spokane-Fiske station. On the right is a graph titled "AQI Quality Index" showing the AQI index over time from August 18 to August 22. The graph has a background with horizontal color bands representing different AQI ranges: 0-50 (green), 51-100 (yellow), 101-150 (orange), 151-200 (red), 201-250 (purple), and 251-300 (brown). A black line represents the AQI index, which peaks at approximately 250 on August 20. The legend on the right lists the following categories: Hazardous, Very Unhealthy, Unhealthy, Unhealthy for Sensitive Groups, Moderate, and Good.

Spokane-Augusta-Fiske

Back

PG10 | **Map** | Map Info | Photos

Tuesday 5-Day

### Air Quality Index

Legend:

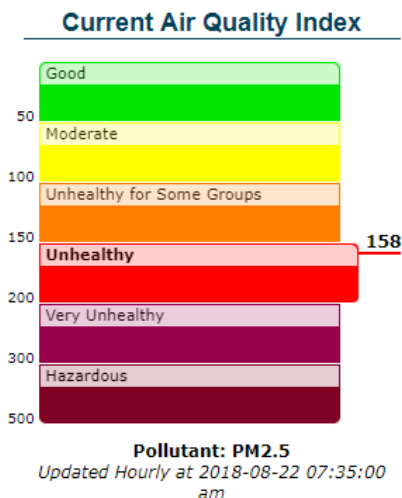
- Very Unhealthy
- Unhealthy for Sensitive Groups
- Unhealthy
- Moderate
- Good

[illegible]

SRCAA Facebook:

Spokane's air quality is currently "Unhealthy/Red". When we are in this category, it means everyone, especially sensitive groups, should limit time outdoors.

You can check hourly updates to air quality at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)



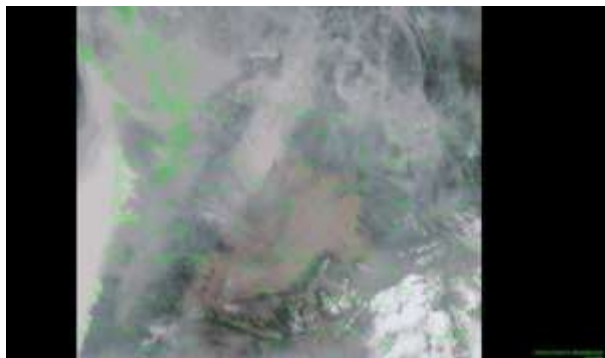
NWS Facebook:

Early morning visible satellite image shows the blanket of smoke across the Inland NW. Expect light winds providing little change today.



NWS Facebook:

Smoke has started to fill back into the Columbia Basin especially the Okanogan Valley.



## WA Smoke Blog Fire Map & Blog:



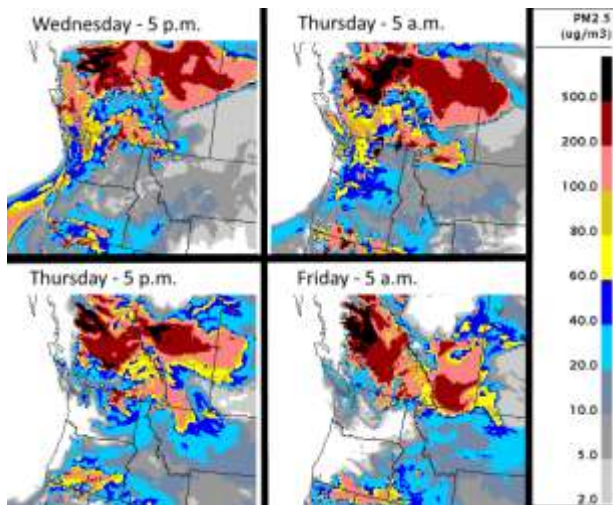
### [Weather event on the horizon will push smoke east](#)

The National Weather Service is predicting a transition to cooler temperatures over the next couple of days as westerly winds materialize with the passage of a dry cold front. As westerly winds pickup tonight, some of the smoke that is over the ocean will pass back over Washington State. Behind the cold front is the possibility for rain on Sunday in the Cascades with parts of Eastern Washington seeing rain Sunday night into Monday morning. Unfortunately, there is potential for new wildfire ignitions due to lightning that come along with that storm.

The coastal areas and Southwest Washington should wake up to clean air tomorrow morning, and the rest of Western Washington will follow shortly behind. Keep in mind that there could still be smoke from Vancouver Island fires that affects Clallam county and smoke from the [Maple Fire](#) that affects parts of Kitsap and Mason counties. Though, that should be minor compared to what has been seen the past few days. The National Weather Service is set to have the Air Quality Alert expire for all of Western Washington tomorrow at noon.

Central and Eastern Washington will likely see smoke make its way back over the state tomorrow, with air quality expected to get worse for awhile. However, this should be short-lived as westerly flow will continue to bring in some fresh air over the state. The National Weather Service is set to have the Air Quality Alert expire for most of Central and Eastern Washington at noon on Friday. The exception is for Chelan, Okanogan, and Ferry counties which will continue to see smoke impacts from nearby fires. While most of us will enjoy the smoke clearing out, the windy conditions could cause more fire growth to occur.

Check out the Environment Canada smoke forecast for the next 2 days. Their "Firework" model does a good job of accounting for Canadian smoke.



### Environment Canada Smoke Forecast

Posted by [Farren Herron-Thorpe \(WA Ecology\)](#) at [8/22/2018 11:32:00 AM](#)

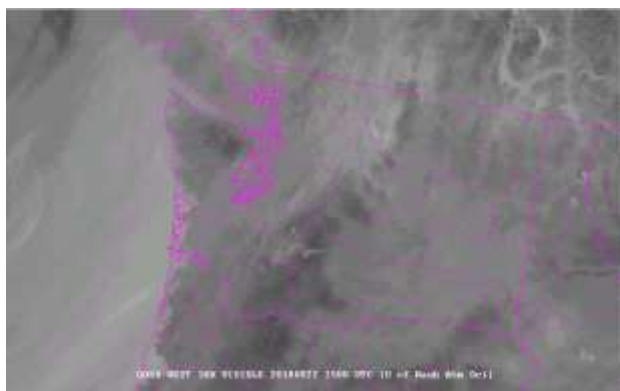
Cliff Mass Blog:

Ash was falling last night around Puget Sound, with white flakes apparent on many cars. And air quality is terrible right now, about as bad as it has been during the entire extended event.

But relief is close at hand, with dramatic improvement guaranteed tonight and tomorrow.

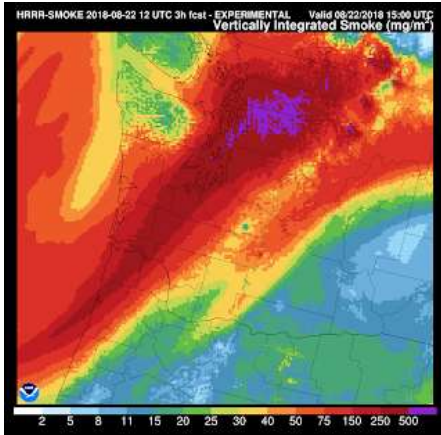
### **Why so bad now?**

Because we have had a conduit of lower-atmosphere winds from the fires over the North Cascades and southern BC, directly into the Puget Sound region. A perfect set up air quality degradation here. You can see the plume of smoke in the latest visible satellite imagery:

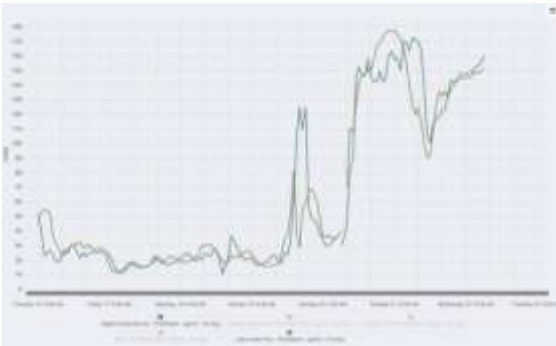


And it more that obvious in the forecast smoke concentration for 8 AM from the NOAA/NWS HRRR smoke plot. Apocalyptic. The vision of Smokezilla.



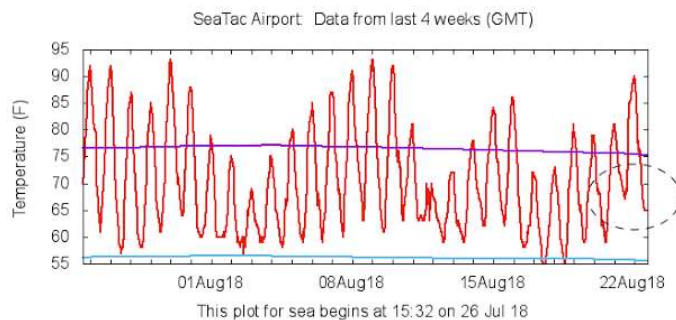


The small particle concentrations (PM<sub>2.5</sub>) measured at Seattle (Dwamish) and north Seattle (Lake Forest Park) illustrates the sustained high values and they have been rising overnight to about 150 micrograms per cubic meter. These are unhealthy levels and twice those being observed in Beijing right now.



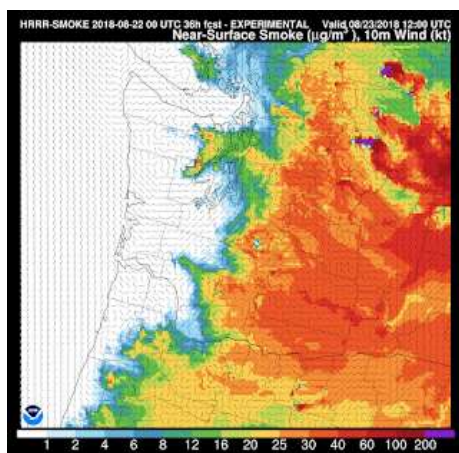
An issue that has not been discussed is the effects on our temperatures. The dense smoke has greatly reduced solar radiation reaching the surface. Although yesterday still got to around 90F in our area, without the smoke, temperatures probably would have surged to the mid to upper 90s.

But the most interesting issue is our LOW temperatures. Notice how warm it has been at night? To illustrate, here is a plot of the temperatures at SeaTac Airport for the last 4 weeks, with normal highs and lows plotted. Notice how our low temperatures have been **crazy warm** the last two days? (see the dashed oval). Like 10F above normal. That is due to the smoke layer, which acts as a blanket, reducing the ability of the surface to lose heat to space through infrared radiation.



Now the good news. The end (of the smoke) is near. The easterly flow above the Cascades has weakened, reducing the smoke supply. And later today onshore flow should rev up, bringing in cooler, cleaner marine air.

Here is the HRRR smoke forecast for 5 AM tomorrow morning. Clean air (white) is moving inland and is about to reach Seattle. Not good for eastern Washington and Idaho since the smoke will be blown eastward. And increasing winds could stoke the fires.



Finally, I am working on two future blogs on the wildfire issue, something that I have become very interested in. The first will describe how our smoke is not a "new normal" but a return to the "old normal" (there were far more fires and smoke during the early 20th century and before).

The second will talk about the cause of this situation, with the key issue not being climate change (which does contribute) but our mismanagement of our forests, nearly a century of fire suppression, human intrusion into wildlands, and flammable invasive species. **And I will suggest that there is a real opportunity for a bipartisan, non-political effort to fix our forests.**

Cliff Mass another blog 12 hours later:

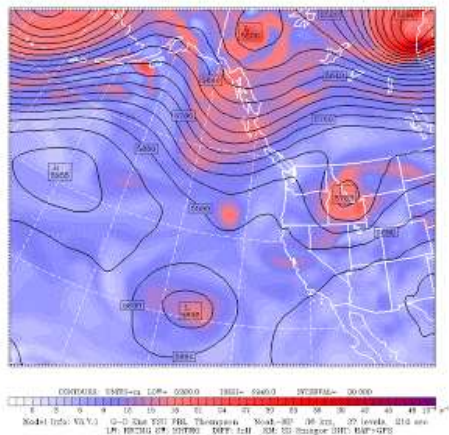
### Relief

Marine air is now pouring into western Washington, rapidly replacing the warm and smoky air that has been in place since Sunday.

Wind chimes are ringing, leaves on trees are rustling, window shades are banging, the smell of smoke is fading, and there is a feeling of normality and well-being. The normal balance of nature is being restored. It is almost a religious experience.

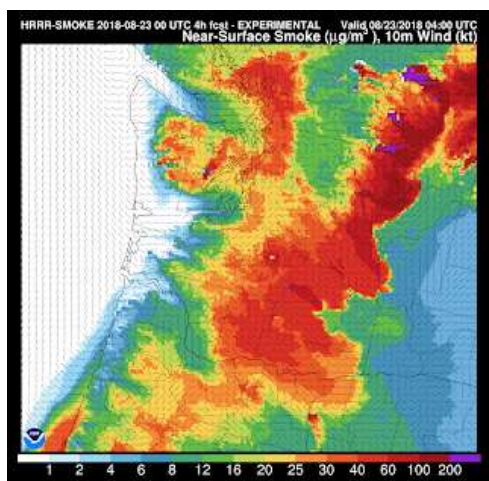
Technically, we are experiencing an **onshore or marine push**, also known as the Northwest's natural air conditioning, and it is being forced by an approaching upper-level trough (see upper level map)

UW WRF-GFS 55km Domain: Valid: 00 UTC Thu 23 Aug 18 (17 PST Wed 22 Aug 18)  
 Plot: 0 h at pressure = 500 hPa  
 Geopotential Height at 500mb (m)

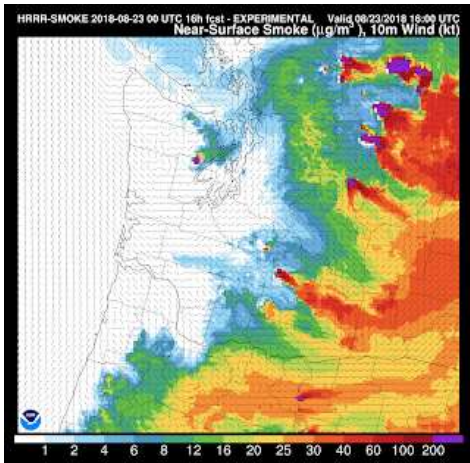


Temperatures at 9 PM at Sea Tac was 65F tonight...it was 79F last night....an impressive 14F decline. And we are just getting started. Visibility has improved at all regional airports.

What you really want to know about is air quality. The HRRRsmoke model forecast for 9 PM shows the coast pretty clear, but with residual smoke inland, particularly over central Puget Sound. That is consistent with the red moon I see outside.



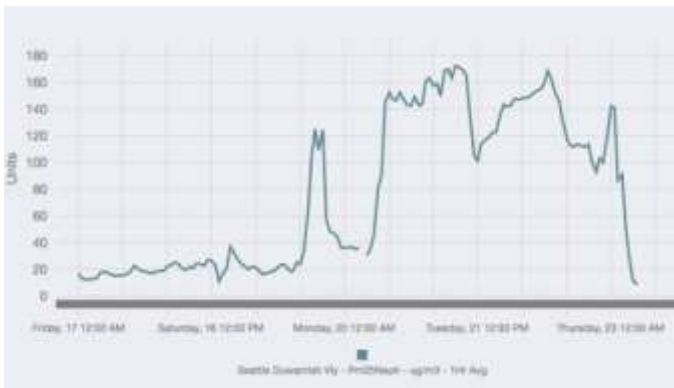
But the story at 9 AM Thursday is amazingly better, with the lowland pretty much cleaned up, with the sole exception being around the Maple fire over the SE Olympic mountains and its plume extending to the NW. Those living in western WA will feel energized and reborn.



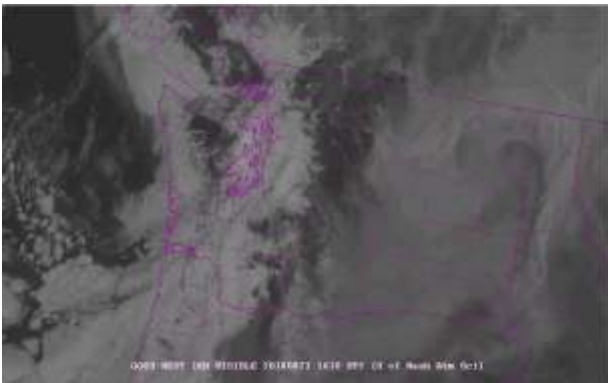
But as in life, there are winners and losers.

Western Washington wins. Eastern Washington loses. Smoke from fires over the eastern slopes of the Cascades will flood eastern WA and Idaho, and increasing winds associated with the changes will increase fire threats on the eastern Cascade slopes. Enjoy the change.

7AM Update: Here is the particulate levels (PM2.5) ending 7 AM in Seattle. Huge drop.



The 9:10 AM visible satellite image shows low clouds engulfing western Washington, but eastern Washington covered in smoke. Want sun and not much smoke? Head to the upper western slopes and crest of the Cascades!



**August 23, 2018**

SRCAA Website Augusta PM25:



PM10:



SRCAA Facebook:

As of 10:35 am, Spokane's current air quality is back in the "Unhealthy/Red" category. This means that everyone, especially sensitive groups should limit time spent outdoors.

A dry cold front is providing good westerly flow across the state and we could see some clearing later this afternoon. You can check hourly updates at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)





## WA Smoke Blog Fire Map:



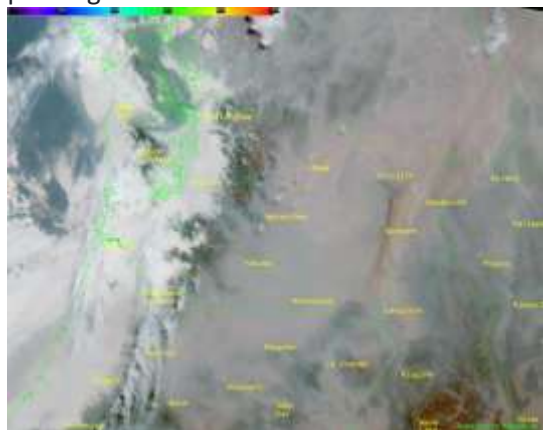
## NWS Facebook:

Wildfire smoke continues to impact the region, but looking at this experimental model suggest some improvement later today into tonight. Yay! However, looking toward the end of the loop there may be another influx of smoke from BC.



## NWS Facebook:

In the early morning satellite image, it shows the marine layer clouds to the west and the westerly winds pushing the smoke to the east of the Cascades.



August 24, 2018

SRCAA Website Augusta PM2.5:

Spokane-Augusta-Fiske



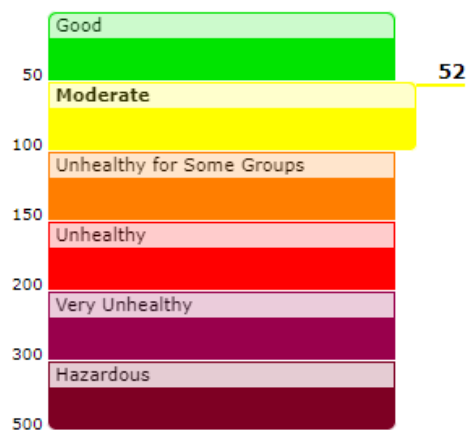
Augusta PM 10



SRCAA Facebook:

We're seeing blue skies this morning and an air quality reading of "Moderate/Yellow". Hooray! You can check hourly updates to air quality at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)

### Current Air Quality Index

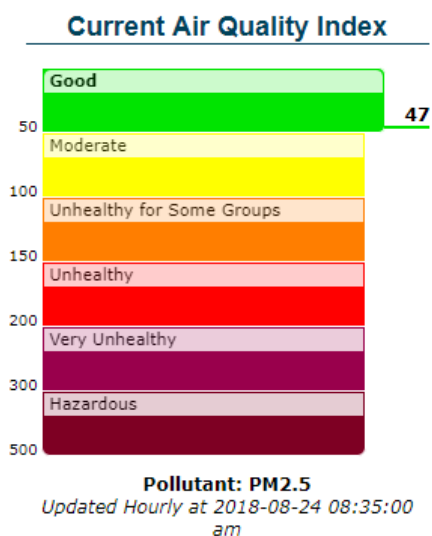


Pollutant: PM2.5

Updated Hourly at 2018-08-24 07:35:00  
am

SRCAA Facebook:

Enjoy the "Good/Green" air quality while it's here. We might start seeing smoke impacts again this evening. You can check hourly updates at [www.spokanecleanair.org/current-air-quality](http://www.spokanecleanair.org/current-air-quality)

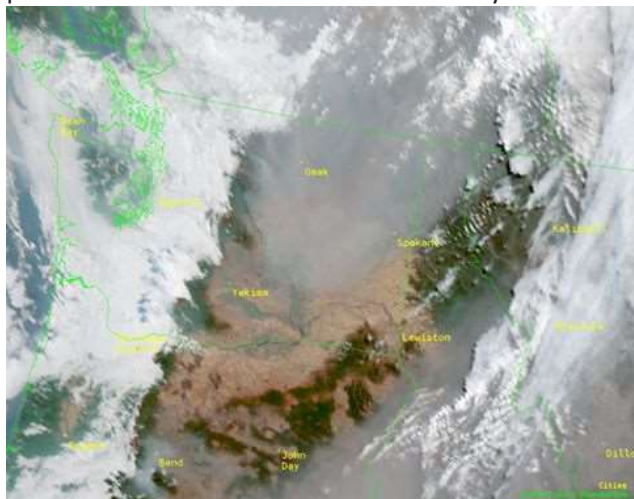


NWS Facebook:

Another loop of the experimental smoke forecast model. Some improvement for parts of the region this morning may be short-lived as another wave of smoke is possible from BC late Friday into Saturday, especially along and north of Highway 2.

NWS Facebook:

Today's morning satellite image shows clouds to the west, but much clearer east of the Cascades! Still some smoke but not nearly as bad as a few days ago. However, this may be short-lived as another wave of smoke is possible from British Columbia late Friday into Saturday.



## WA Smoke Blog and Fire Map:



### Smoke Update for Washington State

The westerly winds cleared out all that stagnant smoke across the state yesterday, as expected. Most of us in Washington have been able to get at least a few hours of **Good** air at times. We are seeing less severe air quality problems around the state, with more localized patterns coming into play. There is also some significant rain expected for the North Cascades on Sunday which is always welcome this time of year!

### **Western Washington**

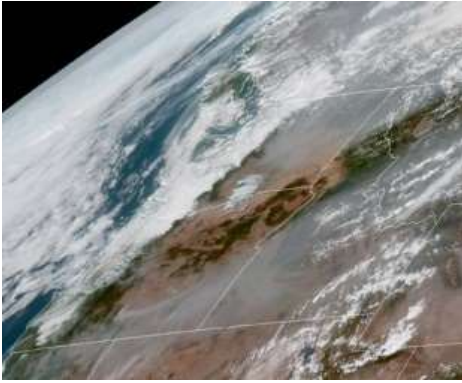
The Vancouver Island fires continue to generate smoke that is causing **Moderate** to **Unhealthy** smoky conditions at times around the west and north coastal areas of the Olympic Peninsula. Port Angeles looks to be getting the worst of it. Other parts of Western Washington have also been getting intermittent smoke, which is **Moderate** to **Unhealthy for Sensitive Groups**. Thurston, Mason, and Kitsap counties are likely experiencing a mix of light to moderate smoke from the Maple Fire and the Vancouver Island fires. Snohomish, King, and Pierce counties may also be seeing some of that as well. Whatcom, Skagit, and Island counties are likely seeing some of the fringes of the BC wildfire smoke plumes.

This intermittent smoke we are experiencing should be expected through the weekend. Southwestern counties will likely continue to see the best air quality in the region.

### **Central & Eastern Washington**

There is a large plume of smoke (see below) from BC and Central Washington wildfires over a large portion of Central and Northeastern Washington that is mostly aloft, but the models are showing that air quality is expected to get worse Friday afternoon in Chelan, Okanogan, Ferry, Stevens, Pend Oreille, Spokane, Douglas, Grant, and Lincoln counties. It's unclear how much of that smoke will mix down to the surface. The forecast does have most of that clearing out by Saturday morning for Spokane, Lincoln, and Grant counties. However, Chelan, Douglas and all the Northern counties are set to remain under an air quality alert through the weekend, with **Unhealthy** air expected. Yakima county has a couple fires of its own (Miriam and Meninick Pass) which are causing **Moderate** to **Unhealthy for Sensitive Groups** air quality that is expected to continue through the weekend and may even have minor effects on downwind counties.

There are still a considerable number of fires in the eastern slopes of the Cascades and the Colville National Forest which will send smoke to various parts of Central and Eastern Washington throughout the weekend. The southeastern counties should continue to see the best air quality in the region.

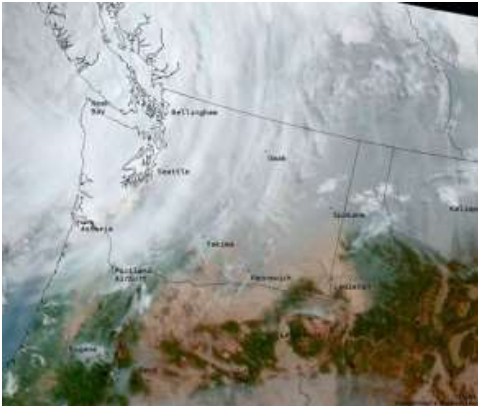


*GOES-East True Color Image - Friday (11:15 am)*

## **August 25, 2018**

NWS Facebook:

Here's our early morning satellite image. Lots of clouds compared to smoke this morning! [#wawx](#)



## **Media Coverage**

### **The Spokesman Review, August 7, 2018**

**Air quality could remain unhealthy until Friday**



Smoke from area wildfires has settled in and around Spokane; this photo was taken Tuesday afternoon. (Colin Mulvany / The Spokesman-Review)

By [Jonathan Glover](#) [jonathang@spokesman.com](mailto:jonathang@spokesman.com)(509) 459-5013

Air quality in the Spokane area dipped into the unhealthy range Tuesday and could remain so until Friday as the region became inundated with smoke from area wildfires.



The Spokane Regional Clean Air Agency, along with the Washington Department of Ecology, issued [air quality warnings](#) for much of Central and Eastern Washington, warning that air quality could be of particular concern to sensitive people, such as those with heart and lung disease, older adults, children and smokers. Air quality was measured in the category of “unhealthy for some groups” on Tuesday.

Lisa Woodard, spokeswoman for the Spokane air agency, said a high-pressure weather system, mixed with [wildfires burning near Chelan](#) in the North Cascades and closer to home near Cheney and Davenport, were to blame for a stagnant, smoky system over the region.

“Because there’s fires in various directions, we can see this kind of swirling pattern,” she said. “That is a perfect ingredient for bringing smoke from the area wildfires.”

Respite could come in the form of moderate wind gusts Friday and through the weekend that could push some of the smoke out of the area and to the north. But it could have the unwanted effect of bringing more smoke to the region from Oregon and California, where the state is experiencing its [largest wildfire in recorded history](#).

Bryce Williams, a meteorologist at the National Weather Service in Spokane, said higher winds leading in to the weekend also could contribute to more area wildfires spurred by the increased oxygen.

“It’s a recipe for high fire danger,” he said. “We’re asking people to be more cautious Friday.”

Williams said the [potentially record-breaking high temperatures](#) will take a back seat this weekend after peaking in the triple digits Thursday. By Saturday, he said it could cool to 80 degrees and remain moderate the following few days.

Data from the Clean Air Agency suggests Tuesday’s unhealthy air over Spokane is the first the region has experienced since Sept. 14 of last year. Woodard said officials have become increasingly concerned as of late, since trends point to [prolonged periods of unhealthy air](#), particularly in the late summer.

Last year was the worst for fire smoke since record-keeping began in 1999, with 18 days of air quality in the unhealthy range; 16 of them from August in September alone.

In that period of time, Spokane also saw its three unhealthiest days, when smoke from large wildfires in British Columbia, Canada and Montana drifted to the region, putting air quality in the very unhealthy category.

### **The Spokesman Review, August 13, 2018**

#### **Spokane Air Quality Goes From Bad to Worse**

With fire comes smoke. Air quality in Spokane has deteriorated today from unhealthy for sensitive groups to unhealthy for everyone, according to the Spokane Regional Clean Air Agency. Still, agency spokesperson Lisa Woodard says sensitive groups will be the most affected.

“Sensitive groups should avoid prolonged or heavy exertion,” said Woodard. “They should move activities indoors, or reschedule for when air quality is better. For everyone else, they should reduce their prolonged or heavy exertion.”

Each hour, the clean air agency updates the Current Air Quality Index, which measures the fine particulate matter found in wildfire smoke. That level reached 175 this afternoon, right in the middle of the “unhealthy” range of 150-200. At 200, the air becomes “very unhealthy,” a category that Spokane County did reach last year.

The agency forecasts the air quality to improve some tomorrow. Woodard says these forecasts are based on the latest information available each morning.

“We’re looking at current air quality and trends, we’re looking at current and forecasted weather, and then we’re looking at tools that report current fire behavior and any new fires that started overnight,” said Woodard. “All of those tools are reviewed, and that’s what we use to come out with a two-day forecast.”

Doctor Bob Lutz, the Spokane Regional Health District’s health officer, says anyone who does spend extended time outdoors, should be smart about it.

“People need to use some common sense,” said Lutz. “If you can’t see the trees a couple hundred yards in front of you, you know the air quality is really poor. And you know you are taking all of that particulate matter in. These are really incredibly small particles that embed themselves in the small airwaves and are small enough to get into your blood vessels.”

Lutz says children are especially sensitive to these particles because they breathe faster, and their outdoor time should be limited.

Lutz also warns against gaining a false sense of security wearing masks. He says masks from hardware stores do not give you any protection. And the masks that do protect you need to be fitted to you, a process that cannot be done at home. Unfitted masks can actually make it harder for you to breathe.

“I don’t want people to think that by having a mask, I’m safe to go out in conditions like this,” Lutz said.

Updated information on the air quality, as well as safety information, can be found at [SpokaneCleanAir.Org](http://SpokaneCleanAir.Org).

### **KREM, August 13, 2018**

Poor Inland Northwest air quality closes Spokane pools

The Inland Northwest is not getting any relief from wildfire smoke. The air quality index is sitting above 160, which keeps it in the "unhealthy" category.

SPOKANE, Wash. — The Inland Northwest is not getting any relief from wildfire smoke. Unhealthy air quality has closed City of Spokane aquatic centers on Tuesday, according to city Parks and Recreation officials.

A city spokesperson said the pools close when the index reaches the unhealthy category. The pools will reopen once the air quality improves.

SplashPass holders will receive updates via email if circumstances change, officials said.

The air quality index is sitting above 170, according to the [Spokane Regional Clean Air Agency](#). The air quality index reaches the unhealthy range once it hits 150.

[The National Weather Service has issued an air quality alert](#) for areas throughout central and Eastern Washington.

### **The Spokesman Review, August 16, 2018**

As smoke blankets Northwest, National Weather Service says Washington air quality worst in the country

The air quality in Spokane and across the Northwest teetered between unhealthy and moderate most of Wednesday as smoke from local and Canadian wildfires blanketed the region.

The National Weather Service's Seattle branch tweeted early Wednesday afternoon that Washington had the worst air quality in the country, posting a graphic that showed most of the state had air quality levels at either dangerous for sensitive groups or unhealthy for everyone.

The Spokane Regional Clean Air Agency predicts that the air will remain unhealthy today due to the hot weather, wildfires and wind, but conditions could improve.

In Chelan and Wenatchee, the air quality Wednesday reached hazardous levels, prompting Chelan County officials to distribute masks.

The Puget Sound Clean Air Agency said smoke in Seattle and nearby areas had reached levels that were unhealthy for everyone.

The Oregon Department of Environmental Quality also said Wednesday the air quality in Portland and Medford was unhealthy.

The weather service said there was a chance of cleaner air pushing onshore in the western part of Washington and Oregon overnight Wednesday.

Jeff Cote, a meteorologist at the Spokane National Weather Service Office, said smoke in the Spokane area had drifted from large fires in British Columbia, Chelan and Okanogan counties. The Spokane NWS office posted an air quality alert in tandem with the EPA, which will remain in effect until Friday morning.

Cote said conditions could improve before then, depending on wind, but thunder and lightning storms predicted later in the week could lead to more fires.

“We’re still in the thick of wildfire season,” he said.

A fire sparked near Chattaroy on Wednesday afternoon, burning 5 to 7 acres. Fire District 4 spokeswoman Megan Hill said crews were able to get a line around the blaze in a few hours, thanks to calm winds, air support and a fast response time.

She said several homes were threatened by the fire, but no structures were lost and no one was injured. She said the Spokane County Sheriff’s Office responded to the fire in case of evacuations, but they weren’t necessary. Washington Department of Natural Resources responded to the fire, bringing inmate crews and Fire District 9 brought a bulldozer, she said.

The cause of the fire is still under investigation.

*The Associated Press contributed to this report.*

### **The Spokesman Review, August 19, 2018**

Spokane air quality reaches ‘hazardous’ range

Air quality in Spokane has tipped into the “hazardous” range, and regional air quality monitors caution anyone, regardless of health, from exerting themselves outdoors.

The air quality index stood at 307 as of Sunday evening, according to the [Spokane Regional Clean Air Agency](#). The maroon-colored rating means that all people, regardless of physical condition or age, will likely be affected.

It’s the worst air quality level Spokane has reached this year.

The smoke could clear by midweek thanks to cooler temperatures and cleaner west winds, according to a National Weather Service report Sunday.

But until then, hazy conditions are expected to continue through the early part of next week, according to a KHQ weather report, and fire alerts will be active due to gusting winds of up to 40 mph.

Cooler temperatures are expected for Monday, reaching into the 80s Tuesday and Wednesday before falling again later in the week.

The haze caused Gonzaga and Eastern Washington universities to cancel soccer matches Sunday. Gonzaga was set to play California State University, Bakersfield at Luger Field at noon. There will be no makeup date for the match, according to Gonzaga’s website. Eastern Washington women’s soccer rescheduled a match with Seattle University for Monday at 1 p.m. at Championship Field in Seattle.

National air monitoring group AirNow released a map Sunday showing conditions in Washington and, directly north of the border, in Canada to be the worst on the North American continent. Conditions in central Washington were particularly bad.

The Tuxedo Junction concert, scheduled to take place at the Arbor Crest Wine Cellars on Sunday, had been canceled due to the air quality, event organizers said.

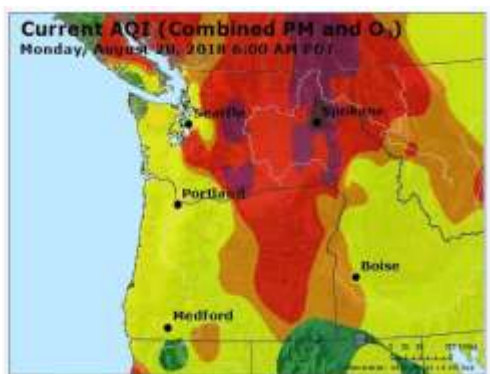
"We appreciate your understanding and support, and *we especially appreciate the firefighting communities out there!*" the business said in a news release.

The hazardous level was seen in Chelan County last week, which prompted officials to distribute masks.

Last year saw several days of hazardous air quality in September, with Spokane pinned between wildfires to the north, south and east.

### **KPBX, August 20, 2018**

Spokane wakes up to worst air in the country, says EPA



Spokane's air quality is the worst in the nation, according to the Environmental Protection Agency.

The air quality index, which is on a 1-to-500 scale, measured 382 in Spokane about 6 a.m., [according to the EPA's Air Now website](#).

That's a bit higher than what the [Spokane Regional Clean Air Agency lists](#) for Spokane's air quality index. It calculated the index at 306 at 6:15 a.m.

Either way, Spokane's readings are in the worst category: hazardous.

Four of the five worst readings in the country, according to Air Now, were from Idaho, including Coeur d'Alene and Lewiston.



## **The Spokesman Review, August 21, 2018**

Spokane's air quality: You've got questions, we've got answers

The hazy days of August have become yet another season in Spokane. That time of year when the skyline is sepia-toned, when you wonder if that run is worth the hacking cough, or if the siren call of the lake is stronger than your desire to check the current air quality website every hour.

Considering three of the last four summers have been dampened by a blanket of smoke, we should all be experts on what AQI means, what type of smoke is worse for you and if our pets are better breathers than we are.

If you're not, here's a tip sheet.

### **Has it ever been this bad?**

No. Sunday was the worst day recorded by local air monitors. At least since 1999, when modern air-quality measuring began.

Stephanie May, a spokeswoman with the Spokane Regional Clean Air Agency, said the days following the eruption of Mount St. Helens in 1980 were likely worse in terms of air quality, but it's impossible to know.

Back then, sensors measured the total amount of suspended particulates. Today, sensors are much more precise and measure for microscopic particles smaller than 2.5 microns in diameter. A human hair, by comparison, is about 60 microns in diameter.

### **So it's never been worse here, but we still have it better than everyone else, right?**

Wrong. Spokane had the worst air quality in the nation Monday morning, according to the Environmental Protection Agency.

Registering 382 on the Air Quality Index, we had it bad. But it was worse beyond our borders.

In the Japanese town of Kanabara Shinden, in the Shizuoka prefecture, an air sensor registered 766 on the Air Quality Index Monday, according to aqicn.org. In Aguascalientes, a city in central Mexico, a sensor logged 500 on the AQI.

As for the cities that have notoriously bad air, they didn't hold a candle to Spokane in recent days. As of Monday afternoon, Beijing's sensors reported very healthy air, with an AQI of 44.

### **What's AQI?**

The Air Quality Index, or AQI, is a measuring stick that runs from 0 to 500, giving people a snapshot of how good or bad their air is. A reading below 50 means the air is fine for everyone. Above 300 means it's hazardous for everyone. Readings above 500 are possible and are called "off index."

The AQI was developed by the Environmental Protection Agency and measures ground-level ozone, particle pollution, carbon monoxide and sulfur dioxide.

### **Is it true that if I can't smell smoke, the air's fine?**

No. The forest fires in Canada to blame for Spokane's current poor air quality do make the air smell like smoke, which is a sure sign we shouldn't be inhaling it.

But even if you can't smell it, it still may be hazardous.

Wood smoke not only creates small particles than can infiltrate the bloodstream, making it particularly egregious, but also contains odorless gases like carbon monoxide, ozone and formaldehyde, said Dr. Bob Lutz, health officer of the Spokane Regional Health District. Given the industrial history of the Pacific Northwest, it may also contain heavy metals, the leavings of smelting.

"You can imagine what that toxic soup does to your lungs," Lutz said.

### **Is it worse than smoking cigarettes?**

It's all bad. Avoid it all.

That said, there's a new smartphone app with a name that can't be printed in these family-friendly pages that converts air quality into an equivalent number of cigarettes.

On Monday, the app said breathing Spokane's air was equal to smoking more than 13 cigarettes.

### **What does the poor air quality do to my lungs?**

Nothing good.

Short-term effects include coughing, sneezing, watery eyes and other symptoms similar to a common cold.

In the long term, such bad air can exacerbate chronic obstructive pulmonary disease or heart issues.

Lutz said people who may be sensitive to the smoke should be more careful. Kids, older people and pregnant women should seek professional help if they feel tightness in the chest or shortness of breath.

More concerning is the cumulative effect of being exposed to the degraded air. Firefighters with chronic exposure have shown increased rates of cardiovascular disease, increased risk of heart attacks, dysrhythmia and some types of cancers.

"When it comes to airborne pollutants, wood-fire smoke is small and causes chronic inflammation," he said. "If you're chronically exposed to it, it adds up."

### **Should I wear a face mask?**

Sure, every little bit helps.

Health officials recommend N95 and N100 respirators, fitted by an occupational medical professional, as the surest way to get protection. But even these can't protect against everything.

"Nothing is going to be perfect. Nothing's going to prevent everything," said May, with the clean air agency. "Sometimes it's that mental aspect. You're doing something to help yourself. And they do provide some protection."

Lutz had a few other tips.

“If you have a beard, forget it,” he said. “And those paper masks you can buy at places like Home Depot, forget about it. They’re not going to do anything.”

### **Is my home safe?**

Officials recommend using HEPA air purifiers to minimize the amount of dangerous air that may be in your home. Make sure it’s recirculating the air inside, and not drawing new air in from the outdoors.

At the very least, keep doors and windows shut to prevent smoke from entering the home.

Researchers at the [University of Michigan have put out instructions for a do-it-yourself air filter](#) that the local clean air agency has endorsed. Basically, you start with a 20-inch by 20-inch box fan, which costs about \$12. Tape a 20-inch by 20-inch by 1-inch furnace filter, which costs about \$15, to its face and crank it up. Make sure the air is blowing through the filter to clean the air.

### **Can I let my pets outside?**

Try not to.

“If it is at all possible for you to keep your pets inside, keep them inside,” said Pia Hallenberg, a spokeswoman with the Spokane Humane Society.

Hallenberg said larger animals like horses can be more difficult to keep safe, because “barns aren’t necessarily air-proof.” But common house pets should be treated like you’d treat yourself or your children.

“Just use common sense. If it’s hard for you to breath outside, it’s hard for your pets,” she said, adding that an outdoor jaunt every now and again is just fine. “You can take your dog for a little walk.”

### **Will the air be like this every summer?**

There’s a good chance of it, yes.

With wildfires in the West increasing in frequency and duration over the last 30 years, summers like this are predicted to become more common.

In a [study published in 2016 in the Proceedings of the National Academy of Sciences](#), John Abatzoglou, a climate scientist at the University of Idaho, and Columbia University bioclimatologist Park Williams concluded that there will come a point when there’s not much left to burn, but that’s decades off. Until then, the fires will be much larger and more destructive than any we’re seeing today.

“Going forward in the next three to four decades ... I expect fires to continue to become unrecognizable to previous generations,” [Williams told the Washington Post last October](#). “In the 2030s, it is a very high likelihood that fires (will be) dwarfing the fires that we see today.”

The two climate scientists aren’t alone. The Union of Concerned Scientists warned recently that wildfires will be “more intense and long-burning.”

“The costs of wildfires, in terms of risks to human life and health, property damage, and state and federal dollars, are devastating, and they are only likely to increase unless we better address the risks of wildfires and reduce our activities that lead to further climate change,” [the group wrote in an article on its website](#).

The [U.S. Forest Service gives a similar warning](#), noting that “climate warming associated with elevated greenhouse-gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires.”

### **Is Spokane in danger of burning down, like the Great Fire of 1889?**

Probably not.

Larry Cebula, a professor of public and digital history at Eastern Washington University, acknowledged that his doctorate in history made him “really poorly qualified to answer” this question, but he tried anyway.

In 1889, Spokane was a small town made largely of wood.

“We had wooden sidewalks leading into brick and wooden buildings, and even the brick buildings were wood inside,” he said.

In other words, everything was ready to burn, and that doesn’t even get to the strides in fire protection the city, and the nation, has made in the intervening years, such as building a professional fire department and requiring home fire insurance.

Also, Spokane burned during a time when nearly every American city burned down, suggesting our cities just weren’t built to be fireproof back then.

There was the Great Fire of New York, followed by the Second Great Fire of New York. There were the first and second Great New Orleans Fires, the San Francisco Fire of 1851, the St. Louis Fire, the Great Chicago Fire, the Great Seattle Fire and the Great Bakersfield Fire of 1889 – not to be confused with the Great Spokane Fire of 1889.

“In the great age of city fires, they all burned. Every damn one of them had a fire at some point,” he said. “That’s largely over. You don’t hear about great urban fires anymore.”

Cebula, though, pointed to the recent threats fires have posed to California cities, like Santa Rosa in 2017 when 5,634 structures burned, and the Carr Fire this month that burned homes in Redding.

“I don’t see where the fire would go” in Spokane, he said. “But you never know.”

Spokane Fire Chief Brian Schaeffer said he was sure Spokane was safe.

“The city of Spokane is certainly at a higher risk, as is all of Eastern Washington,” he said. “But we’re confident of the resources and the people that we have to meet the risk.”